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SEPTEMBER 1958

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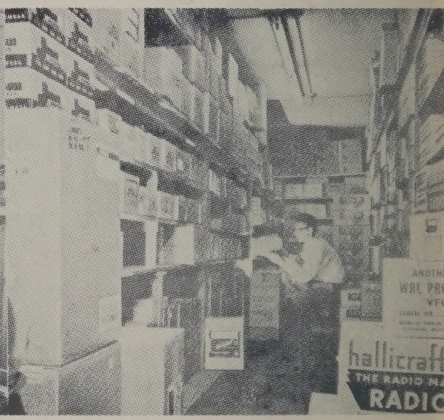

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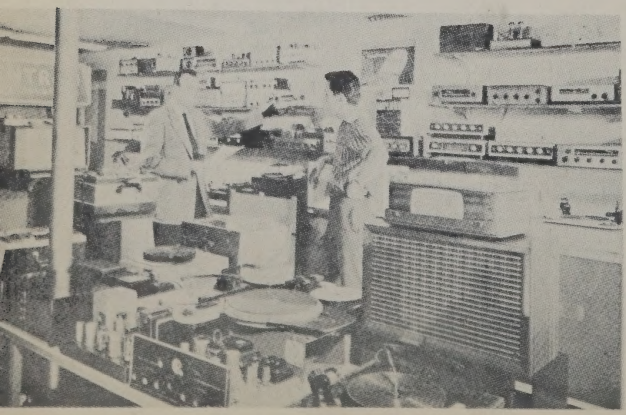

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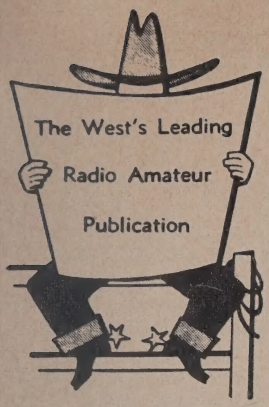

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THE EDITORS LOG

First off, I want to introduce you to the latest addition to the Western Radio Amateur staff: Jean M. Kincheloe, K6OQD will be writing a column devoted to the distaff side. All you girls can now beef to Jean.

Another YL addition comes to us in the person of Mildred O'Brian, W6HTS/AF6HTS who is going to keep us informed on MARS activities throughout the West. So all you 4th AF and other MARS people forward your operating and other news to Mildred at 3221 Lassen Way, Sacramento 21, Calif.

We have had a change in our "Round the Bay" Editorship too. Chick has found that business keeps him too busy to do justice to the column and has turned over the reins to Don Davis, K6TKL whose first column appears in this issue. More about the personal lives of these people next month.

On behalf of our Publisher, W6JRE and our many readers...we welcome these new additions to the magazine.

SECOND CLASS

If you didn't notice, last month's issue was mailed second class. This procedure saves us considerable postage at the post-office over our previous bulk postage rate. However the change over entails a considerable amount more than just moving the address from the back to the front cover. The issues must be bundled different along with a whole new line of red tape to become accustomed to. This change plus a new printing process noticable with our slick paper as opposed to the dull paper we used two months ago has slowed us down a bit. The result is that our publication date has slipped a week and you may find your copies coming to you about the same time QST and CQ arrive. Be patient. In a couple of months we should be cack on our standard middle of the month publication date.

11 METERS

As you all know by now, the FCC has withdrawn the 11 meter band from Amateur service. It is interesting to note wording used in the 4th memo report and order from the Commission pertaining to Docket no 11959 where the 11 meter action is reported. "....*Some of the comments received by the Commission suggested sharing of the 11 meter band by Citizens Radio and the Amateur Services. The Commission has taken into account the fact that insofar as possible, all amateur bands have traditionally been allocated exclusively to the Amateur Service and considers that this allocation principle should be continued.*" These words came a scant two months after 99% of our bands were assigned to IRAC, to be shared by us. (See Aug. Editorial.)

Thought you'd be interested.

Concerning 11 meters, there isn't much that can be done. The way it's now set up, any person can obtain a class D Citizens radiotelephone station license. Also *any person* can operate said station. The very existence of this band will put to rest arguments to drop the code requirement for Amateur radio. This type of person now has his own band.

I suggest that everybody interested in operating on 11 meters write their nearest FCC office and secure some revised form 505's. Fill it out for a class D station permit and send it in to Washington. Allow overworked FCC plenty of time to process the application and get it back. You will then be able to operate any type of crystal controlled *(to .005%)* transmitter using AM phone as long as the "...*maximum plate power input to the anode (plate) circuit of the electron tube or tubes which supply energy to the radiating system of a station shall not exceed..*" 5 watts except on 27.255 where the power limit is 30 watts. Fun, huh? A type certified transmitter is not required. Any of the following frequencies are available: 26.965,-75,-85 and 27.005,-15,-25,-35,-55,-65,-75,-85 and 27.105,-15,-25,-35,-55,-65,-75,-85 and 27.205,-15 and the thirty watt 27.255. Twenty two channels in all. For license application data International Crystals (for one) meet the stability requirements.

Think of the possibilities. We can build up simple AM, DSB or SB rigs and talk with the XYL from the car or office. All sorts of communications for

Cont. on page 30

Complete 12 watt cw station set up ready for operating.

An "Easy To Build" Novice Transmitter

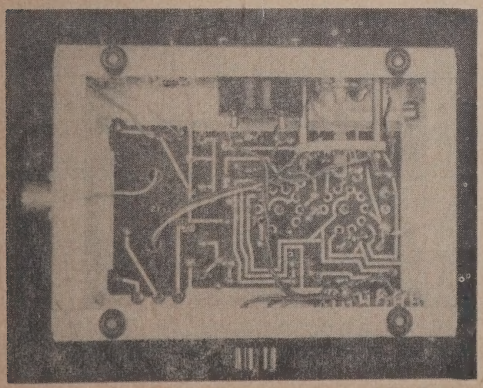
P. C. Caringella, W6NJV
P. O. Box 1025
Ontario, Calif.

The transmitter described in this article is designed for 40 and 80 meters and runs approximately 12 watts input. Although low in power, it is definitely high in performance. Many contacts have been made using this rig and a simple dipole antenna. There is absolutely no TVI, even when the transmitting antenna was located two feet from the T V antenna!

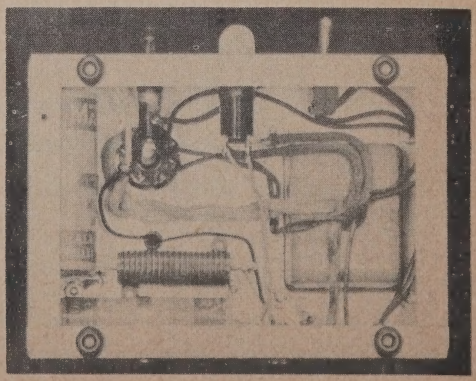
Construction is simple, requiring no coil winding and a minimum amount of wiring. The "heart" of this rig is the International T-12 printed circuit unit. This unit is available from International Crystal Mfg. Co. at a very nominal cost. The transmitter tube line-up is shown in Fig. 1. One-half of a 12BH7 serves as a Pierce crystal oscillator (V1a), and the other half as a buffer amplifier. (V1b). The final amplifier is a 5763 and is capable of 12 watts input. (V2). The tank circuit for the 5763 is a pi network and will match a relatively wide range of impedances. The pi network also attenuates harmonics. The power supply is illustrated in Fig. 2. It is conventional in all respects, with a 5Y3 full-wave rectifier and a single section capacitor- input filter. An interconnect cable is also shown since the power supply is constructed on a separte chassis. The cable is approximately 1. 5 feet in length.

CONSTRUCTION

The transmitter and the power supply are constructed on separate aluminum chassis measuring 5"x7"x2" (California Chassis Co. #A-101). Draw the hole layouts as shown in Fig. 3 and Fig. 4 on the chassis paper wrapper before removing it. Center punch the holes, then remove the wrapping. Drill the holes and make all cutouts as



Underneath view of transmitter. Note how the two tuning capacitors have been removed from the printed circuit board and mounted on front of chassis in upper left of photo.



Bottom view of power supply.

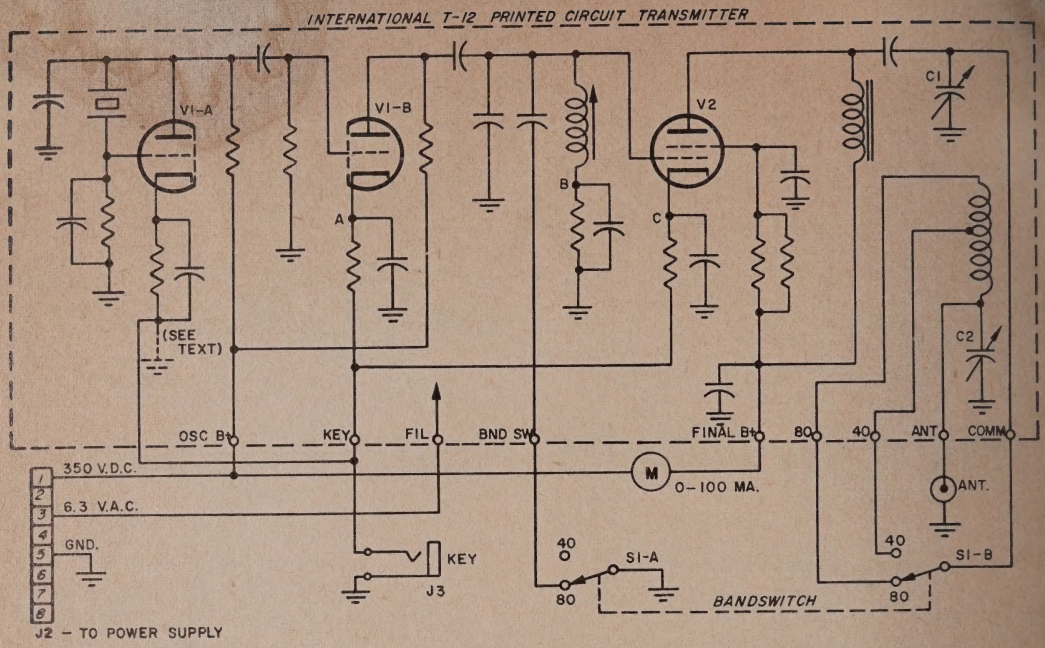


FIG. 1 — SCHEMATIC OF TRANSMITTER

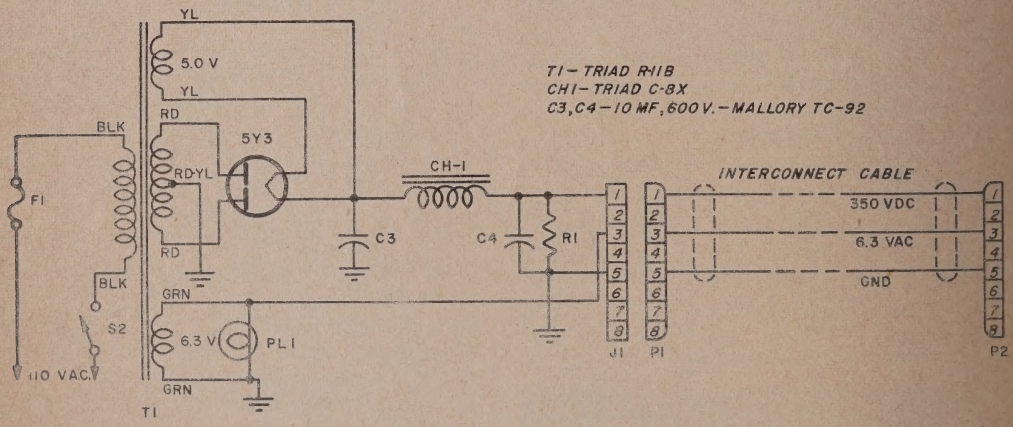


FIG. 2 — POWER SUPPLY AND INTERCONNECT CABLE

PARTS LIST

C1- 65-320 mmf. padder (Arco L-303-M see text.
C2- 425-1260 mmf. padder (Arco L-308-M) see text.
C3, C4- 10 mf., 600 volt (Mallory TC-92).
CH1-7 Hy., 75 ma. (Triad C-8X)
R1- 50,000 ohm, 10 watt.
J1- octal socket (Amphenol 78-S8)
J2- octal plug, chassis mount (Amphenol 86-CP8).
P1- octal cable connector, male (Amphenol 86-PM8).
P2- octal cable connector, female (Amphenol 78-PF8).
J3- jack (Switchcraft No. 11)
PL1- pilot light assembly.
S1A, S1B- D.P.D.T. rotary switch (Centralab 1405).
S2- S.P.S.T. toggle switch.
T1- Power transformer (Triad R-11B)
M- 0-100 ma. miniature meter (Arrow Sales, Inc. 461PM7)
MISC.
Chassis- California Chassis Co. +A-101
Printed circuit board- (International Crystal T-12)
5Y3 tube
Co-ax connector (Amphenol 83-1R)
Hook-up wire, for wiring and for interconnect cable (Belden wire assortment No. 8865)
2 Knobs for padders (Millen A006, 1/8" shaft)

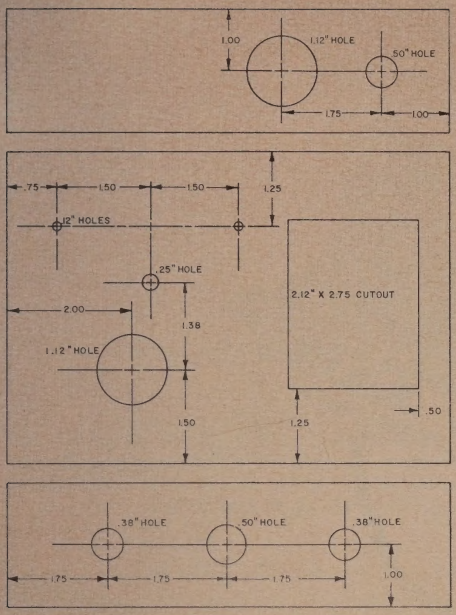


FIG. 3— POWER SUPPLY CHASSIS

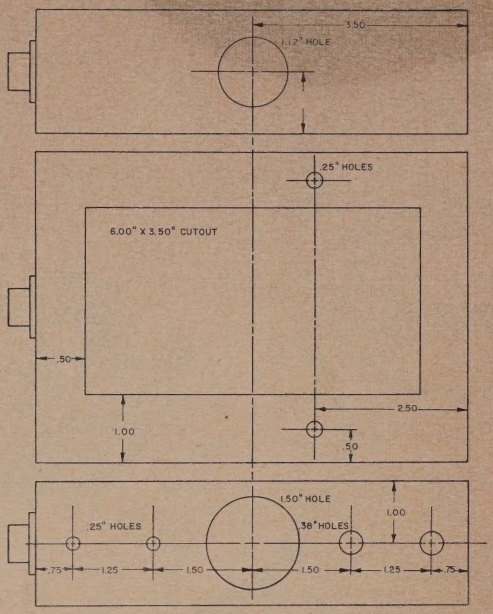


FIG. 4— TRANSMITTER CHASSIS

shown. (Note; The screw holes for the board, the meter, and the co-ax connector are not shown. These should be drilled-to-match upon installation.)

Location of parts can be seen in the accompanying photographs. The fuse holder, pilot light assembly, and the toggle switch are mounted on the front side of the power supply chassis. The power transformer, filter choke, and an octal socket are located on the top side of the same chassis. Another octal socket (output socket for the interconnect cable) is mounted on the back side. The filter capacitors, which come with mounting brackets, are mounted on the underside of the chassis. Wiring of the power supply is relatively simple and lead lengths are of minor importance.

Two minor modifications are performed on the transmitter printed circuit board before it is mounted on its chassis. The first involves the oscillator circuit (V1a, Fig. 1). Normally, the oscillator runs continuously and the following stages are keyed for C. W. operation. The cathode resistor was ungrounded as illustrated and connected to the key jack. This enables the oscillator to be keyed along with the other stages. The second modification involves the resonating capacitor (C1) and the loading capacitor (C2).

These capacitors, which are mounted on the printed circuit board, are removed. They are padder type capacitors which are adjusted with a screwdriver. The replacements are padders with a special adjusting screw which has been lengthened to accommodate a tuning knob. The two capacitors mentioned are mounted on the front panel of the transmitter chassis along with the tuning meter, the band-switch, and the key jack. The printed circuit board is mounted on top. A chassis-mount octal plug is located on the back side. The interconnect cable from the power supply plugs into it. All leads should be kept as short as possible. After the transmitter and power supply have been assembled and wired, re-check wiring for possible errors before attempting operation.

ADJUSTMENT AND OPERATION

Connect the power supply to the transmitter and turn it on. The filaments should light. Next, check the B+ at pin 1 of J1 on the power supply chassis. It should read approximately 350 volts under load. Plug a key into the key jack and a crystal into its socket. A VTVM should be used for the next step. If a VTVM is not available, a 20,000 ohm-per-volt multitester may be substituted. Connect the meter between Point B and ground. This checks the grid drive to the final amplifier. Be sure the band-switch position corresponds to the crystal frequency being used. Point B in

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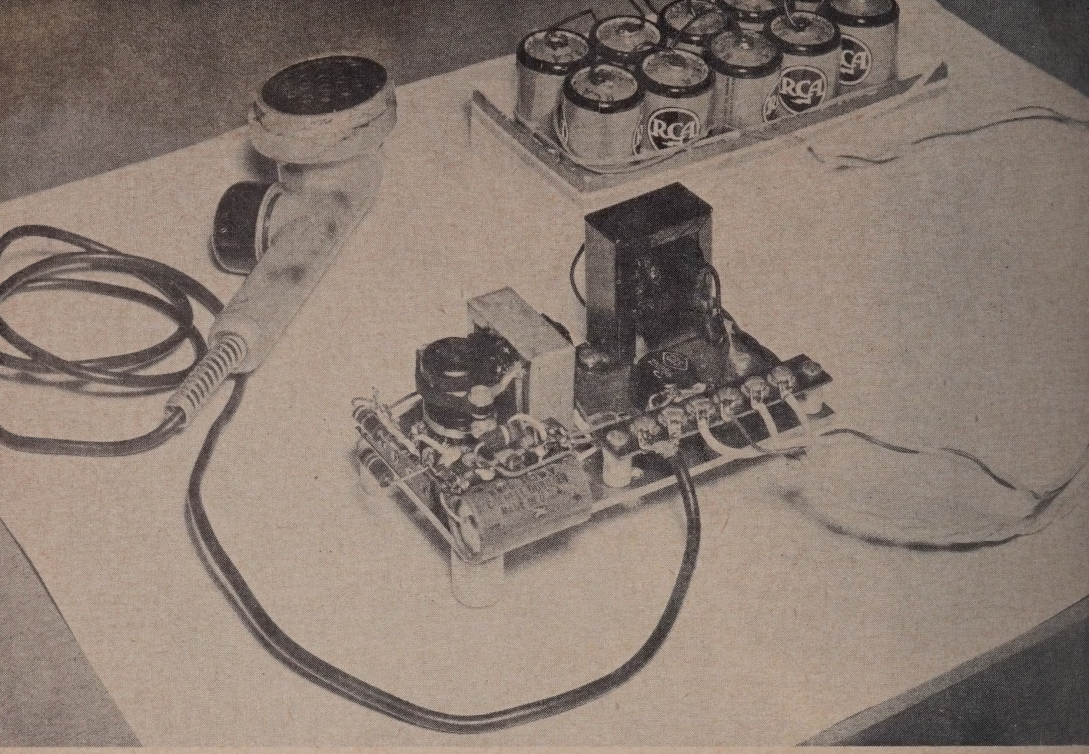


The Single-Ended Class "B" Audio Amplifier

Irving Gottlieb, W6HDM
1592 Waxwing Ave.
Sunnyvale, Calif.

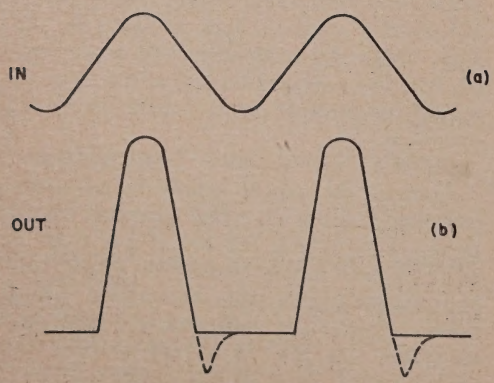


Fig. 1—Important waveforms in single ended class "B" amplifier. Waveform (a) represents a sinusoidal tone impressed at the microphone. Waveform (b) is the resultant wave monitored at the secondary of the output transformer. The solid wave is idealized; the dotted excursion is a small amount of overshoot which exists in the actual amplifier.

Long accepted among practicioners of the audio art is the rule of thumb that the performance of an amplifier which produces visually obvious waveform distortion is necessarily something less than acceptable. However, blind subscription to such a tenet can deprive us of a very useful circuit configuration, to wit, the single ended class "B" output stage. The author is cognizant of the power of tradition and is prepared to assume an understanding attitude toward those would-be readers who will discount the plausibility of the scheme, from the title of the article. It is hoped that the even stronger power of curiosity will motivate most to lend an objective ear to what may initially appear as a flagrant violation of classical concepts.

Not only does a single ended class "B" stage operate as an amplifier, but what must seem drastic from the standpoint of fidelity, it functions also as a rectifier! Thus, the sinusoidal wave of Fig (1a) is converted to

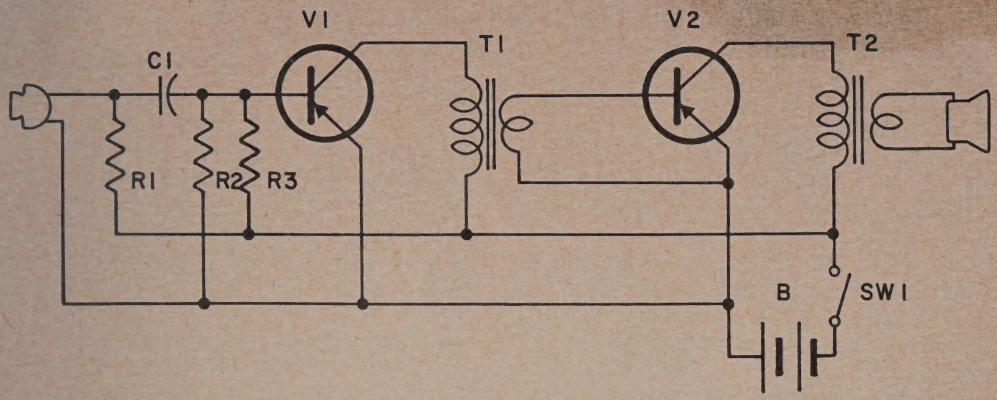


Fig. 3—Basic circuit of the single ended class "B" amplifier. The first stage is a conventional class "A" driver stage. The output stage is not biased and is driven entirely by the signal.

that of Figure (1b). The latter waveform is rich in even harmonics. It would not be unatural to expect that speech modified in this manner must sound garbled, muddy, and hardly worthy of consideration in terms of practical amplifier performance. Now, inasmuch as we have all been exposed to "obvious" situations in electronics which are not necessarily so, it behooves us to evalute this situation with caution. Let us contemplate two relevant cases wherein speech is subjected to waveform modification.

Speech clippers as employed in many ham modulation systems inflict waveform modification somewhat of the same nature as that produced by rectification. Yet the intelligibility of the speech is not appreciably affected even when the clipping is quite drastic. Speech clipping may cut the peak

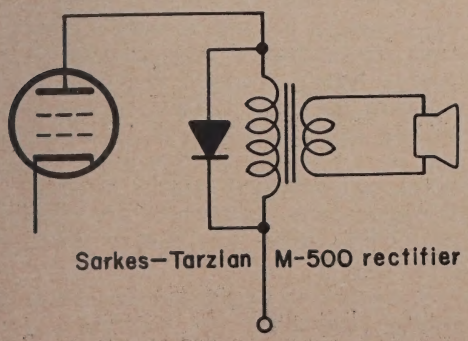


Fig. 2—An interesting experiment which simulates the performance of the single ended class "B" stage. The rectifier diode rectifies the audio signal developed across the output transformer primary.

PARTS LIST:

MIKE—Any single button microphone with sensitivity approximately equal to that of a "telephone mike"
C1—8 to 12 ufd electrolytic capacitor
R1—1000 ohm, one watt composition resistor
R2—5600 ohm, one watt composition resistor
R3—220 ohm, one watt composition resistor
V1,V2—CBS Hytron 2N256 Transistors or Sylvania 2N242's
B—12 volt source capable of delivering at least 1.5 amperes. Best results are obtained from twelve volt storage battery. Ten series connected size "D" flashlight cells are also suitable.
T1 and T2—The author used experimental transformers: see text for recommended commercial products.

amplitude of speech waves in half without greatly affecting intelligibility; herein is a clue that rectification, which, although in a different manner, also cuts peak excursions in half, might likewise leave intelligibility little worse for the experience. It is true that clipped speech is often difficult to identify with the known voices of the speaker, but there are applications, amateur radiotelephony among them, wherein "naturalness" takes second place to intelligibility. In an academic sense voice reproduction which cannot be readily identified is distorted. However, for the purpose at hand, it is considered significant that such distraction need not be unpleasant to the ear, and need not make speech difficult to understand.

Speech clippers in amateur radio modulators are followed by low pass filters in order to attenuate the higher harmonic frequencies generated by the clipping process. This prevents side band splatter of the modulated carrier. However, if we used the clipper type modulator as a PA amplifier instead of a modulator, we could dispense with the filter. Such an improvised PA system could produce perfectly intelligi-

ble speech. Bear in mind that throughout this discussion, we are dealing with the audio medium of speech, not music. The harmonics and the inter-harmonic modulation produced by any such device as a clipper, a clamp, or a rectifier inserted in the path of a music waveform is, admittedly, bound to give us a first class demonstration of low fi.

A simple, but thought provoking experiment may be performed by connecting a Sarkes-Tarzian M-500 germanium junction rectifier across the primary of the output transformer in a radio or TV set. Make certain that the rectifier is polarized as depicted in Fig. 2. (The converse connection will short out the quiescent dc current in the transformer primary and will not serve to demonstrate the experiment. The ac component, under this condition, cannot exist at all in the transformer primary). The rectifier does away with one half of the ac voltage excursion developed across the primary. In other words, it rectifies the audio signal. It will be observed that, although music is muddy, speech is quite clear and distinct. The rectification produced in this experiment is not unlike that existing in a single ended class "B" amplifier.

In the above described experiment, the surprising discovery may be made that a pleasing quality is introduced by the "distortion" of rectification. If this subjective evaluation is made, it will be due to the artificial timber added by numerous even harmonies generated by the rectification process. Thus, this phenomena provides a "lift" for flat voices.

Inasmuch as the single ended class "B" stage operates on a "pay as you go" basis, this amplifying technique should prove attractive for electronic megaphones, battery powered PA systems and intercoms, and for portable amateur radio rigs. For the latter application, a low pass filter should be incorporated for the same reasons pertaining to speech clippers. Generally speaking, the single ended Class "B" amplifier will provide higher peak power, higher efficiency, and longer battery life than that obtained from a single ended class "A" amplifier using the same transistor. The author did not evaluate the performance of single ended class "B" tubes. A slighly different situation would prevail with the tube because a tube is non-conductive for the overshoot cycle developed by the transformer leakage reactance. The transistor output diode is, on the other hand, projected into its forward conductive region when the polarity across the transformer primary reverses. However, in the event that the performance of a tube is degraded by the effect of excessive overshoot, a diode shunted across the transformer primary should make the situation equivalent to that of the transistor circuit.

The author constructed a basic single ended class "B" amplifier suitable for application as an electronic megaphone, part of a PA or intercom system, or for use as a "hailer" on police and emergency vehicles. Five watts of peak power are obtainable when the amplifier is energized from a twelve volt storage battery. When flashlight cells are used, the supply voltage decreases as the voice level is raised. This is due to the relatively high internal resistance of these cells. Ten series connected cells provide fifteen volts under no signal conditions. When a saturation level signal is applied, the battery voltage falls to slightly under eleven volts and the available audio output is about four watts. The basic schematic diagram of the single-ended class "B" amplifier is shown in Fig. (3).

It will be found that the phasing of the windings of interstage transformer T1 is important. The internal impedance of the power supply provides a mutual impedance for the two amplifier stages. Either positive or negative feedback will thereby exist, depending upon the phasing of the windings of T1. If the amplifier oscillates, reverse either primary or secondary connections of T1. This will be of particular importance with flashligh cells. Also helpful is a 1000 ufd electrolytic capacitor connected from the emitter of V2 to the "cold" side of the primary of T2. If oscillation exists after these precautions have been taken, substitute two series connected 560 ohm resistors for R1. Connect a 100 ufd electrolytic capacitor from the junction of these resistors to the positive battery terminal. It should be appreciated that these troubles are not at all peculiar to the single ended class "B" circuit, but are as likely to occur in the conventional push-pull configuration as well. It is suggested that operation be first established with a twelve volt storage battery as power supply.

A measure of success was attained in restoring "naturalness" by inserting a feedback path which provided bass boost. This consisted of a 10K resistor in series with a 0.1 capacitor, the combination being con-

Cont. on page 36

Fig. 1 Front View of W6BLZ linear amplifier.

W6BLZ Linear Amplifier or 120 Watts of AB-1

E. H. Marriner, W6BLZ
528 Colima Street
La Jolla, California

The search for the ultimate in a radio transmitter has always been a serious occupation of the radio amateur. I have mentally built a number of transmitters myself, trying to fit my needs, Not until our ex-editor, Jack Manning, urged me on with a few parts did I really get serious about building a small companion for my lonely Central Electronics 10B SSB exciter. I wanted something the same size, or small enough that I could move it around the room myself, without the aid of a push cart.

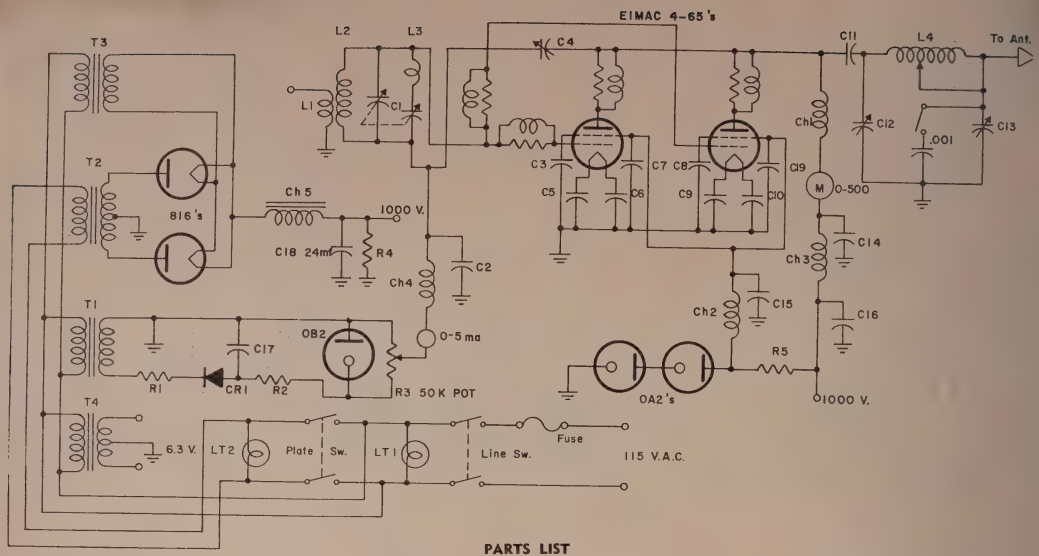
After a few preliminary letters to find out the availability of Central Electronic cabinets and a few other parts that would fit on the chassis, I got started. Everything seemed to flow together in a neat order.

Conditions for TWO TUBES as used in this amplifier.

	AB-1	AB-2
Plate voltage	1000	1000
Screen	300	300
Grid	-55	-40
Zero signal plate	60 ma	60
Maximum plate current	120 ma/150	250 ma
Grid current	0 ma	about 4 ma
Input	120/150 watts	250 watts

When it was finished it was invigorating to have a matched unit to look at. The 10-B now had an amplifier with plenty of wallop, in a cabinet that doesn't take two people to lift..

The decision to use AB-1 came about by watching the TV set. I found using AB-2 occassionally would put a few cross-hatches on the TV screen. In view of neighborly relations, we decided to stick with AB-1 where we never drew grid current and bothered the TV sets. An external control for the bias adjustment makes it easy to change to AB-2 if you desire. Most SSB exciters have enough power output to give good driver regulation in the event you would rather use AB-2 and go further into the non-linear portion of the curve. It becomes a comprise of efficiency and distortion. Another criterion which I had to resolve was what screen voltage to use. The tube chart indicated with AB-1, 500 volts would give more of a swing, and more output. AB-2 indicated a maximum of 250 volts with some tolerance on the screen. As it worked out, I used 300 volts on the screen which let me run the amplifier either AB-1 or AB-2. This actually was a necessity because the screen was stabilized with VR tubes. A series screen resistor from the high voltage power supply was used. During key up



PARTS LIST

T1 Midget power transformer. Burstein-Applebee 19C730, or equivalent, to give approx. 125 v at 30 ma.
T-2 Power transformer 2340-v c.t. at 250 ma Triad P-15AL (gives 1000 volts each side c.t. under load)
T-3 Filament transformer 6.3 V at 6A. Triad F18X
Tube sockets for 4-65A E. F. Johnson type 122-100 sub-mounted.
Chassis Aluminum 10x14x3.
Cabinet Central Electronics 10B, cost $21.00 p.p. Total height of chassis and parts not to exceed 8-¾ inches.
Tube Heat dissipation caps for 4-65A HX-29 National or HR-6
Parasitic choke used in grid and plate leads. 3 turns #18 wire wound on 50 ohm, 2 watt resistor.
Lights 115 v glow assemblies. Dialight Corp. 91408-931 frosted cap. Can be obtained in color.
Line fuse 5 amps.
400 ma meter fuse 3/8 amp. (Use it! May save a meter)
Tank switch Surplus from BC375E. 6 position
0-400 ma meter - depth not to exceed distance from front panel to transformer. Saw bolts off close to nuts.
0-5 ma meter. Jap meter type CALRAD. These can be obtained at Universal Radio.
Name Plates: If anyone knows where I can get more like those shown, please let me know.
C-1 Hammarlund 18 stator plate, per section, CHC 483614 surplus number. or HFD-140, 142 uufd per section. Micro dual. (Make sure to insulate this condenser from chassis).
C-2 200 uufd silver mica. Do not substitute this is part of neutralizing set up.
C-3, C-7, C-8, C-19, C-14, C-16, C-15 .005 disc ceramic 2 kv. BL-D50 Sprague Cat. 3521
C-5, C-6. C-9, C-10 .01 Disc Ceramic 2 kc.
C-4 Bud Neutralizing condenser #890, or equivalent, 2/12 uufd.
C-11 .005 Disc Ceramic 10,000 volt.
C-12 Surplus condenser from ARC 5 transmitters 200 uufd.
C-17 40 mfd. 450 v, electrolytic.
C-18 24 mfd Cornell-Dublier, 330 v, a.c., KG119 AC rating holds at 1000 volt d-c. If you are skeptical and don't want to chance it, use two 8 mfd at 1000 v in parallel.
C-13 TRF type 375 uufd per section all ganged. If a 4 gang section to make 1000 uufd cannot be found, use a smaller one and pad wth mica and a switch, for 80 meters.
Two rectifiers 816's
Two 4-65A Eimac, tubes
One OB2 for bias supply.
Fuse holder for line 5 amp. fuse.
Ch-1 Bud 2.2 mhy CH 568 at 1 amp.
Ch-2 Z-50 Ohmite vhf choke.
Ch-3 ditto
Ch-4 2.5 Mhy 125 ma.
Ch-5 Triad C18A 8 Hy, 300 ma, 90 ohms.
L-1 2 turns push back wire.
L-2 34 turns, 1 inch dia., Air Dux 816T. (Prune and set with grid dip meter 80/40)
L-3 12 turns same (Set 20 - 15 - 10)
L-4 Air Dux P-1 #1212D6
80 meter Short 10 turns from antenna end
40 meter 20 turns
20 meter 30 turns
15 meter 33 turns
10 meter - not tried - suggest wind 4 turns ½" dia. add.
R-1 33 ohms 1 watt.
R-2 3000 ohms, 5 watts. May need to be changed with different type transformer. Limit tube OB2 current less than 30 ma.
R-3 50,000 wire wound pot M50MP, or equivalent.
R-4 75,000 ohm bleeder 100 watts. Or 100,000 ohms.
R-5 30,000 ohms 50 watts.
CR-1 125 ma selenium, 5m1 rectifier.

conditions with the VR tubes, gave me 400 volts. However, I found the maximum current of 35 ma was going through the VR tubes; when I talked the VR tubes went out. Thus by using two OA-2's to give me 300 volts on the screen they remained firing all of the time, with 25 ma going through them. This tied the screen down at 300 volts regulated. Actually the loss of power input drops from about 170 watts to 130 watts. Eimac charts indicated it is better to keep below the rating and to expect 5% less output than shown. I found th OA-2's gave adequate regulation for this screen voltage — the problem was solved.

The bias voltage as stated in the charts indicated -100 volts. To obtain class AB-1 operation I found it to be a lot less. The Bias Poteniometer R-3 is a panel adjustment, and can be varied so that the two tubes at zero signal draw 60 ma. When modulated they will flop up to 150 ma. The bias supply should be wired first and checked out to see that the polarity is negative. It is always possible you have "goofed", inserting the condenser upside down or the OB-2 wrong. It is a good idea to check the bias supply before you wire in the condenser and regulator tube. If you have a positive voltage, turn the CR-1 selenium Rectifier over and proceed from there.

Keep in mind the series and load resistors underneath get hot. Keep plastic wiring from them and saw out a hole on the back of the chassis and replace with some perforated metal before starting assembly. Drill a few holes back of the 816's also to help let heat out.

The underside around the tube bases, was shielded to isolate grid and plate. One side of the partition is perforated metal for air

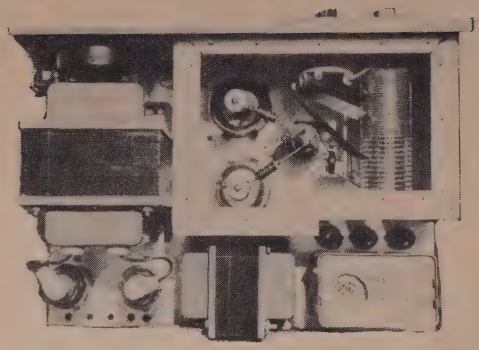


Fig. 2 Top View. Neutralizing condenser can be installed between rfc and back shield. Grid wire to underside can go through ¼" ctc feed through insulator by drilling hole between 4-65A sockets. OB2 is alongside plate meter.

circulation. Feed through insulators were used coming out from this compartment so that the leads could be filtered. This prevents RF getting out and RF getting in to cause feed back. While the photo shows no neutralizing, it was found it is better to put it in and be safe. Some tubes seem to need it some do not. I found that with one 4-65 in place there was seldom any neutralizing problems - with two tubes, there was instability. A Bud vertical type neutralizing condenser was installed alongside of the RF plate choke on top but was put in after photo was taken.

A small hole with a ¼" feed through was put between the tubes and a wire run underneath to the bottom of the grid tuning condenser. The multiband grid tuning circuit works fine on all bands with just two coils. If you try to make the coils up from other stock than indicated, dip the 80-40 meter band first with the condenser about all of the way out for 40. Then add the other coil L-3. There will be inter-action and some adjustment pruning may be necessary to get all of the bands in the condenser ranges.

Note that parasitic chokes were used between the tubes to prevent interaction which might cause parasitics between the two tubes. The bypass condensers used will solder right into the rivet holes on the tube sockets for short leads.

The pi tuning tank coil is shorted out from the antenna end. The switch, is a surplus job from the BC-375-E which has large contacts to prevent loss. Shorting wires are made from wide copper strips to reduce power losses.

A question of the metal box on top may come up. How did I make it? Well, I got some one inch aluminum angle and screwed the aluminum to it using flat head counter-sunk brass 4-40 machine screws. This was the most time consuming part of the whole job as the box wasn't square.

I had to leave a little room between the condenser and the box for OA tubes. Perhaps if a condenser of another size was used a little more room could be scraped up. This condenser, incidentally, is rated at 330 volts A-C, which may raise a few eyebrows. It being A-C rated indicated better construction and the DC rating is higher. W6-IQY and myself have been using them at 1000 volts and higher and have yet to have one go out. It is the only one with

Cont. on page 34

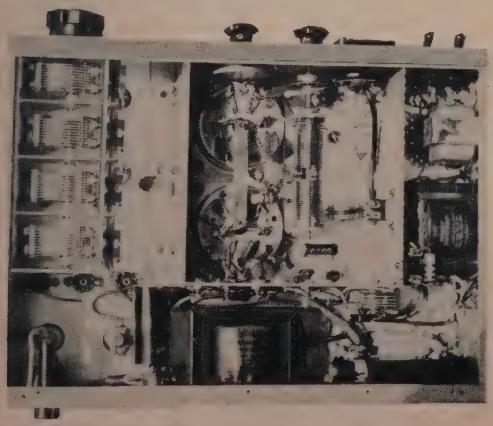


Fig. 3 Bottom View. Note bleeder R4 lower right. R5 is under it. Bias C-17 left of filament transformer.

VHF Record

News of 6 & 2m with a roundup of the amateur 135-70-25-12-8-5-3-1.4 cm bands

Robert B. Cooper, Jr. K6EDX
4832 North Fruit Ave.
Fresno 5, Calif.

Bob Fisher, K6BGJ, demonstrates his six meter SB rig for the gang. Whistle in the mike and watch 700 watts of 50mc RF tickle the lightbulb filaments.

TRAVEL and LEARN

One of the armed service branches advertises that "one" should join the ranks and see the world.

As VHF editor, for the past few months, I may not have traveled quite enough to qualify as a world traveler, but I have managed to put several thousand miles on both my vehicle and myself. In my meanderings over the state (of California) as combination good will ambassador to ham clubs, shacks, and general get-togethers, and as an advertising salesman to prospective advertisers, it was inevitable that I would renew many old acquaintances and make many new ones. In all cases, attending ham fests, club meetings, conventions and visiting at various ham shacks, has been most profitable and enjoyable. I feel that my understanding of what the western amateur operator is, how he thinks and most important, what he wants from a this publication, has increased greatly. Granted, there is still much to learn, many meetings left to attend and a lot of shacks remain to be visited. But now, I have met face to face with some 4,000 plus western hams, and feel that I have 4,000 plus new ideas on western amateur radio. I believe that my traveling has been most benifical and am sure that you will see the results of *you coming forward to me* with your ideas in future issues of Western Radio Amateur. My little black notebook is just crammed full with ideas and facts gathered while in the field and now I must find the time to decipher and categorize them.

Every final needs one of these. Bill Locy, K6GTG, and his 832A 220 driver. Look at the purty silver plated tank lines mommy!!!

WHATS NEW IN WESTERN VHF-UHF?

You read of the new 1296 megacycle record in the August column. It's a mark westerners can be proud of, but not necessarily a distance destined to remain constant for very long! We are already aware of plans being laid to extend it to nearly 300 miles, a distance which may be an established fact before the ink is dry on the September issue. Two separate groups, one from the Bay area and the other from the south lands, are searching now for the best weekend to try a shot between Mt. Able(or Pinos)and Mt. Diablo. Remember, you saw it first in Western Radio Amateur!'

Dropping one band, we have word from

Mac, W6CDT, of the development of a *square cavity* by one K6QAC, for 432 operation. Mac says that the unit is everybit as efficient as the more conventional brass tubing units (which have to be machine lathed), and have the added advantage of being simple enough structurally that the average 432 enthusiast can put one together right in his own shack. Now if WE can get someone to put an article together on one of these units...

Anyone for 436 TV record attempts? Jim Kampschroer, K6HXZ of Sunland, has a nice set up complete with vidicon working now and mentions having hauled it to the top of various southland mountain peaks during the month of June. Also on TV in southern California are W6UWW, K6IPR and W6WPD. All are working on the receiving setups in hopes of an early record attempt from mountain top to mountain top.

Here's another low frequency DX man with 144 forward scatter and moon bounce ideas. Bud Baine, W6WB of DX fame, is looking for interested parties with which to work on SERIOUS 144 tests. Bud wants it to be known that this is a no holds barred deal, and only those interested in the ultimate in receivers, transmitters and antennas need reply. With his fine hill top location in San Francisco, we may be hearing things from W6WB on two meters, in the not to distant future.

Transistors and six meters: We have notes pertaining to a transistor application for 50 megs this month. K6UWC is now manufacturing (from his shack) transistorized converters for six, and they seem to be just the ticket for low drain mobile applications.

Here's some hot scoop news from the scourge of the panhandle...Phil Patterson, W5SFW. Henry Radio, Los Angeles, has just shipped a Johnson 6N2 to the Canary Islands, EA8 land. This is probably intended for 50 meg operation this fall...

Active VHF-UHF'er from Oakland, John, K6TRR keeps the converters hot on 50, 220 and 432 night and day. DX on six includes 2 VK's, ZL, JA, ad infinum.

Caught at the San Jose Fest, July 26, we see (L-R) K6OGX, K6SVK, K6TMN, proudly displaying their steak dinners.

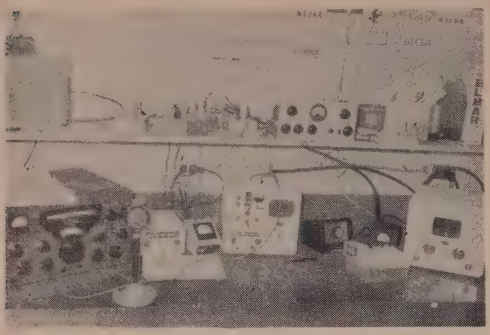
Idaho news again. This time for both six and two meters. W7JIP, Oregon type station is skedding W7MWP in Boise on on two meters, indicating that Idaho has at least ONE well equipped 144 megacycle man. On six we still have W7ACD, plus W7OWW and W6GTJ/7. We repeat this news every chance we get 'cause you know how rare Idaho was on six last fall and spring when the east coast boys were state hunting. Now all that one has to do is to whip out his trusty copy of WRA and inform our eastern cousins of who 'tis on...

Need Delaware on 50 megs? (who doesn't?) We used to think that anyone who had "worked" two Delaware six meter stations must have a vivid imagination, but now we find a fellow with four stations worked and four cards to prove it...Harry Workman, K6JTC, of Sunnyvale has cards from the following: W3CGV, VTG, HHV and EIO. On top of this, Harry says they have the following company on six: W3WHZ, JQE, RQT and K3AZY and AGY. Could be this deserves further checking into.

144 PERSEIDS SHOWER RESULTS
WESTERN AREA

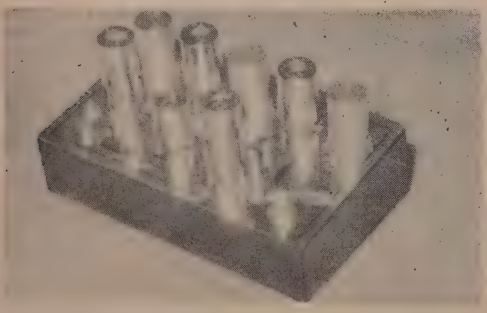
August 12...every year for the past three, the lower extremities of two meters has seen more and more high power cw signals crowding on the band for DX schedules as the greatest annual meteor shower of them all, the Perseids, peaks in the early morning hours of August 12. This year, W6LIT of Loma Linda, Calif. made great preparations to take 500 watts, a long yagi, 75A2 receiver with 417A converter to Wyoming for operation on the 9th-12th, and to

Another East Bay VHF'er K6UWD Piedmont, has gear going on 6 & 220 with long vagi's 70 feet above the ground for both bands.



transfer to Idaho for the same trials for another few days. And he made it, as far as Wyoming, anyhow. With a whole slew of schedules, the only stations known to have made the grade, two way, were W7VMP and W6NLZ! Many pings were heard from eastern stations scheduled, but nothing long enough to provide QSO's.

At W6NLZ, schedules were set up with WØQDH and WØZJB, both Kansas, WØIC, Denver, Colorado, W6LIT in both Wyoming and Idaho. Trails with WØQDH failed altogether, neither party hearing any pings or signs of information. WØZJB sent a heard report to John, but no signs of the Kansas station were heard on the coast. Better luck was had with WØIC however, requiring only six minutes (0632-0638 August 12) to complete the necessary exchanges at 40 WPM. W6LIT/7 Wyoming was worked on both sides of the WØIC schedule, running from 0556-0713 before the necessary information was received and checked. So, net result, two new states for John, W6NLZ, leaving only Idaho west of the Rockies. New totals: 11 states, 4 call areas and Hawaii.



Looking for a commercially built converter on 432? Centimeg makes one using a pair of 6AM4's GG, with the cutest little silver plated cavities you have seen. A claimed noise figure of 7 db (average) is noted with each unit.

Tony, VE3DIR agrees with John, NLZ, on the results of the Perseids shower. Seems that the count was poor all over, and completed contacts few and far apart. Trops (ground wave) was very good throughout the east during this session however, says Tony, and many nice DX contacts were managed as a result of the heavy shower activity and schedules. Just goes to show you what can be done if enough stations get on the air when conditions are good...to quote our Canadian DXpert.

GOOD BYE HAWAII..144

One man can only muster so much perseverance and so much stamina. A ham is human (although few will admit this fact) and even though we are more persistant than most, we too have our breaking point...the big build up, and then the bigger let down.

For this reason and for many others. VHF enthusiasts the world over have sat in silent admiration as Ralph Thomas demonstrated that he had that extra amount of persistance, know how, and perhaps just plain luck, to keep the best possible kind of two meter signal on the air at regularily scheduled times from an area more than 2,500 miles distant from any major two meter activity. Ralph is a *record breaker*, and a *record maker*. And this year he was going to do even better than last. This year he had schedules with several 144 stations all along the western coast line from Seattle to L.A.

It was just last year, a little over a year ago, that the VHF world was shattered beyond belief as the news seeped out that the impossible distance 'Hawaii to California' had been bridged on two meters. This year looked just as promising. The evening inversions were becoming visable from W6NLZ's mountain top location once again. Now it would just be a matter of days perhaps even this night would be the night.

"Were...was"...the antenna system at KH6UK is no longer. 144.0005 is no longer. Tommy is discouraged. And rightly so. It all happened on August 1. A 60 mph wind bent a 6 by 8 inch eye beam beyond the point of return and down came 4 very long yagis.

Look for me on six, says Tommy, I'll be back on two again..someday..maybe.

220 MEGACYCLE NEWS

Egads! Even on 220 you can't escape the stuff. SSB on six then on 2 and now on 220. Paul D'anneo, K6UZK, Berkeley, has his low power mixer unit (ending in a 6360) going on 220 now,

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Loupin The Loop

By Corky W6ORS
1833 Vega St. Alhambra, Calif.

Here goes again for another column for Western Radio Amateur and all the ships at sea...Ran into our LASCM at the San Gabriel Valley RC last night. It was nice to see the old Goat again after so long. Understand that he will be at the next meeting of the Ramona Radio Club to give a talk on the activities of the League. At the SGVRC meeting, Dr. Henry Richter, W7VZA, showed his pictures of Russia that he took during the recent IGY Conference. All in color and very enjoyable...Just heard of a contact made on Sept 2 from La Crescenta to San Diego on 1295mc. W6JRK on the north end and W6BLK on the southern end. Jim was XMITing es RCVing on 1295 and using liaison on 2 meters. Sigs were 5 by 5 in San Diego along with this ops WELL DONE...Others on 1200mc from this SoCal area include W6ZW, W6DQJ and W6MMU. There are lots of ops on from the San Bernardino Microwave Society, but we have yet to hear about anything of this sort from them (outside of setting the record of approx. 195 miles from Santa Barbara to Pt. Loma). Incidentally, the Editor of this mag attended the last meeting of the Society with this op and gave a pitch on the editorial published last month...Have you heard of the latest activities from Ray Meyers, W6MLZ? It seems that Ray received an invite to attend the ARRL Convention in Washington, and was lucky enuf to catch a ride on one of Lockheed's delivery flights as far as New York and hence to the Nations Capitol. Ray sat in on the TVI board (or Panel) and had the privilege of addressing the multitude's present. It seems that he followed the delegate from Texas and really brought down the house with some of the TVI stories from here in SoCal. After all was through, he received an invitation from Lt. Gen. F.H. Griswold, KØDWC, to fly back to the coast in a C97, outfitted with the best Ham Station money can buy. How about that? Ray also informs this op that he is running for Southwestern District Director of the ARRL at the insistance of Virg Talbot, W6GTE, who is running again for Vice-Director. Lots of gud luck to you guys, hp you make the grade...If you happened to see the Labor Day issue of the Times paper, I'm sure you saw Ray's picture and the article about the 1931 Nautilus and her trip towards the North Pole, that Ray was Electrician and radio op on. Also tis told that Ray was on Radio KFI the 2nd of Sept. speaking on the same subject. Hurrah for Ham Radio and the publicity that Ray is giving it... A big THANKS to the following named Radio Clubs that send their papers to this op every month. The news contained there in keeps us all abreast of the activities of hither and yon: The Rio Hondo RC, The West Valley RC, Riverside County Amateur Radio Assoc. San Francisco RC, the Marin Amateur RC, Santa Barbara Amateur RC, Delta Amateur RC, The Atlanta RC (GA.) Brandon Amateur RC (Canada). The Assoc. Radio Amateurs of Long Beach, The Lockheed Amateur RC, The SCARS of Redwood City, San Gabriel Valley RC and others that are not before me right now, agn, tnx 2 all... Rcvd a QSL from Glenn W6KLZ announcing the new High Baller's Club. Everyone from Blackball Kit OZS and Dale GKM right down to White/GRN ball Max K6LDI listed and info on their recent mobilecade picnic. Looks like all these guys had a fine time to and from the site, along with the Field Strength measuring Contest. Winner was W6VJB using one of those Elmac Custom Antenna coils (plug send the coil to 1833 S. Vega St., Alhambra) with 4 others right on his heels using (you guessed it) the same coils. Sounds like fun OM(s), hp 2 be along next year...Pappy W6CK back in the hospital for a check-up...K6HZP with a new Jr. op...A new YL for K6IEE. K6DLY/6 operating from the top of Mt. Whitney on 6 es 2 meters last month... W6CQK, Jack Pitts, to talk to the SF Radio Club this month...W6WRU last in a VW...Did ya know that the Editor of Radio-TV News is a Ham? Don't forget the VHF QSO party Sept 20-21, and the ARRL Convention in San Diego in Oct. Hope to BCN U all there.

73, Corky, W6ORS

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DX report

Dick Spenceley KV4AA
Box 403, St. Thomas
Virgin Islands

FO8AT, Clipperton Island, appeard on the air around August 9th. He will be on the air until August 23rd. This trip was organized by the San Diego Radio Club in conjunction with the Scripps Oceanography Institute of La Jolla, California who permitted one ham operator to go along with them. We understand the operator was K6RXM and, apparently, he was not able to appear on the air as much as desired. The rig is a Collins KWM-1. K6RXM is to be dropped off at Panama and will fly back to San Diego. Contributions, while not necessary for QSL, would be welcomed by the San Diego Club to help pay air transportation. QSL's go via W6KSM.

Bob, W4PBH, writes that he will be stationed at Flint Island in the next few weeks in connection with IGY work. The U. S. claims this spot but it is presently under British administration. Bob queried the FCC on this matter and was tentatively assigned the call KD6AA. Later the FCC withdrew this and stated that permission should be obtained from the British authorities but failing this Bob could use W4-PBH/KP6 (??). Flint Island is way out by itself, north of Tahiti, and should qualify for separate status. Bob will see what he can do towards obtaining a VR7/8 or 9 call. Equipment will include a HT-32, SX-101 and Hy-gain, 3 element, tri-bander beam.

Robbie, VQ4ERR, writes that VQ9GU (Seychelles) only gets on for about 30 minutes per day for about 4 to 10 QSO's. His total stay there will be 5 weeks. VQ4-ERR says that no one will miss a VQ9 QSO (SSB/AM) when he visits the Seychelles in August 1959 as he will be on full-time. (He has paid for his passage already). Robbie will also visit VQ1, Zanzibar, this year, as soon as mobile equipment is received from the states, and will go there again early n 1959.

Necessary funds have been subscribed, by the West Gulf Club, to send FK8AS to Wallis Island and we understand that he will be there for 52 hours sometime in September. He hopes to use the call FW8-AS. 14040-14060 Kc.

The Galapagos Island should be in the news this month thanks to the efforts of Messrs. WOAGO, WOLUX and WOWGF

LeeRoy Scott, W3PGB, Silver Springs, Md.

Ed KP4WN & KV4AA looking over tower base at KV4AA.

who plan to operate from there for two weeks starting around September 15th. Calls may be HC8AGO etc. etc.

Via Reg, W6ITH, whom we contacted at FS7RT, we hear that a smallpox case, arriving from St. Vincent, caused the entire island of Anguilla to be placed under quarentine. Thus, VPORT will not be heard until this is lifted (Possibly by September 1st).

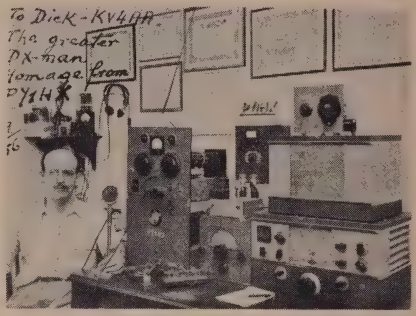
ZS6IF was due to be on as ZS6IF/7 August 23rd.

Beda, OK1MB, informs us of a Czech Geographical Expedition which will leave Czechoslovakia in November 1958 and whose travels will cover the next five years. This will be carried out by the well known geographers and writers OK2HZ and OK2ZH. Tatra 8 cylinder trucks will transport the expedition. Gear will consist of two KWM-1's. The call used will be OK7ZH followed by a slant and prefix of country operated from. Substantial stops will be made in the following countries: Roumania, Bulgaria, Greece, Turkey, Lebanon, Jordan, Egypt, Saudi-Arabia, Yemen, Kuwait, India, Nepal, Ceylon, Burma, Thailand, Malaya, Borneo, Java, Australia, Tasmania, Polynesian Islands, Philippines — Then back through Japan, Korea, Manchuria, China, Tibet, U.S.S.R. and Poland. OK1MB will have daily schedules with them. (Something to keep you busy for some time to come!)

G3ZY DX'pedited to Monaco and was on as 3A2CF up to August 30th.

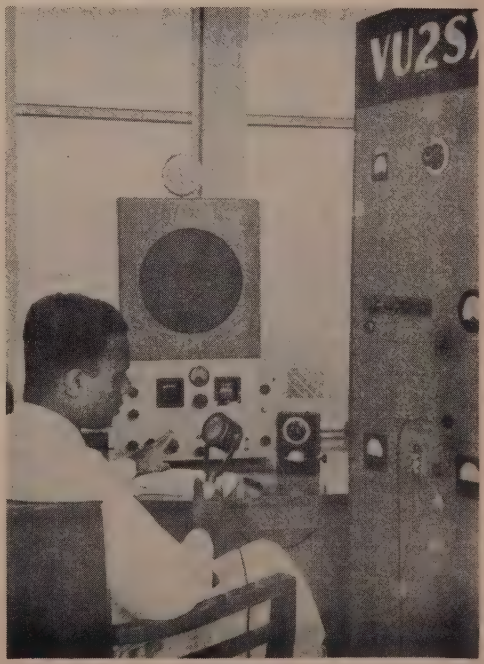
Rumors persist re UA1GB/O being ac-

QTH of W8EWS 10 mi. East of Flint, Mich.



PY1HX

JA1TD 1AAW 1EF 3IW
1CR 1CJ 1CC 1BK
3AA 1AG 1CO 5AI



VU2SX

tive from Tanna Tuva. 7 mc only!

We talked to Fred, VP2LU, from VP6-FH. He now awaits his own call on Grand Turks Island.

CN8GU returns stateside about September 1st and CN8JK will take overZD7SA QSL chores.

G3AAM, checking with FB8, says that no activity is planned for Tromelin Island in the foreseeable future.

VU2BK and VK6MK report QSO's with AC4AX, on phone, 14098, around 1200 GMT. AC4AX is VU2AX(ex-FN8AD, and will be in Tibet for some time to come.

VS9MA, Maldives, has been quite active, 14080 1130 GMT, and will be at that QTH a long time.

Danny and the YASME II returned from the British Virgin Islands on 29th after knocking off over 5000 contacts. We have been busy (and I mean busy) ever since trying to get the QSL's out as rapidly as possible. This chore, coupled with finishing up the YVOAB QSL business has probably made this column very brief this month. The YASME II is now in shape again, Danny has put on plexiglass hatch covers (leakproof now, we hope) and is due to sail for St. Kitts in about 4 days, Aug. 17th. He should be on from St. Kitts by August 19th and, after a nine day stay, should go on to Antigua and Montserrat which will be treated similarly. He may then return to KV4-land or may continue down the line to Dominica, St. Lucia, St. Vincent and Grenada. We beg those QSL'ing to him to put GMT on card and "proper" GMT date. YASME's logs will always be kept in GMT.

Further word comes from WOAGO regarding Galapagos trip (Operaton Turtle 1958). We quote:

INTINERARY: Leave Winona, Minn., September 5th in bus converted to mobile home, owned by WOWGF, for Miami: Leave Miami September by air and arrive Quito, Ecuador, 10:30 A.M. same day. Present letter of greeting from Minnesota Governor Orville Freeman to President Camilo of Ecuador. Will visit other Government officials and hams as time permits. Leave Quito via rail or highway for Guayaquil from where we will leave via plane or ship for HC2-land on September 15th, as arranged by Ecuadorian goernment.

EQUIPMENT: HT-32 and SX101 supplied by Hallicrafters. KWM-1 supplied by Collins (Possible KW linear). Telrex tri-band beam. Hi-gain trap vertical. 2½ KW power plant of HC1ES and 500 watt plant supplied by Onan. 16mm camera and 400 feet of film plus various still cameras. Mohawk 4½ pound tape recorder.

OPERATORS: WOAGO, WOLUX, WOWGF plus two to four HC hams from Quito.

DATE OF OPERATION: About September 19th continuing for two to four weeks.

FREQUENCIES: 14, 21 and 28 Mcs, 7 Mc will be used for daily schedules with Quoito.

MODES: Mostly SSB plus AM and CW.

QSL's via WOAGO,WOLUX or WOWGF. Please include self-addressed, stamped envelopes. (QSL is standard size). This is no "buck a throw" deal but we are going to considerable expense to put this DX'pedition on the air and leave things to your own judgement.

FLASH FLASH FLASH — It is OK to QSO W3ZA/3W, Saigon Viet-Nam. On August 7th 1958, FCC approved the portable operation of W3ZA/3W in the republic of South Viet-Nam. The Commission's letter states in part " . . . communication between that station (W3ZA/3W) and other amateur stations licensed by the Commission is not prohibited."

This does change the status of Viet-Nam with regard to article 42, Section 5 of the International Radio Regulations (Atlantic City 1947). Viet-Nam is still on the banned list but W3ZA/3W, which is licensed by FCC may now be contacted by W/K stations.

PLEASE, All stateside QSL's via W2-JXH. 10 or 15 cents in coin or stamps would be appreciated to defray costs. Pacific Island hams QSL to: MSUG, Box 34, Navy 150, FPO, San Francisco, Calif. All others QSL to MSUG, 137 Rue Pasteur, Saigon, Viet-Nam. IRS's will be appreciated.

(Thus the loophole to the loophole has been found after considerable efforts by Rundy—!)

W3ZA/3W may be found most days between 1030 and 1130 GMT on 14305 SSB/CW.

VK9AD (Norfolk Island) shipped W6-UOU's KWM-1 back to Singapore on August 9th. It will be used during the VS1 trip to VU5 (Andaman/Nicobar Islands) this month if the trip materializes.

The KWM-1 sent by W6UOU to OK 2ZH has been received and has been on

Cont. on page 40

W 7 NEWS

Howard S. Pyle "YB" W7OE
3434 74th Ave. S.E.
Mercer Island, Washington

As unerringly as the tides, the 'dead-line' date for columnists approaches and every thirty days repeats itself. So, vacations over...kids back in school (yours, not mine!) we're all about ready to settle back in the ham shack and get some activity on the air in the fall and winter evenings ahead. I've been lax in net activity like so many others, but hope too, to join the exodus from the great outdoors to the basement shack.

In the July issue I reported a visit from Walt Cobb of New Jersey; somehow his call got a bit mixed in reproduction and appeared as W3CO...sorry Walt, we all know that New Jersey is 'W2' land...W2CO makes it right.

Our 'key' visitors in July were Doris "Butch" Singer, K9IXD and her OM Cliff, W9SWD, from Indianapolis. We had a very pleasant visit with them and Butch presented your reporter with a most impressive certificate of membership in the "Bull Thrower's Association". Printed in three colors on expensive parchment, it occupies a prominent place on my shack wall. To read the qualifications however, makes me wonder Butch, if I really DID lay it on that thick! Hi! Incidentally Butch has since made the 'big time'; the Sunday Magazine Section of the Indianapolis STAR of July 17th, carries a real fine feature article entitled "Many Indianapolis Girls are Radio Hams" with five photos of the gals themselves. Butch shares title page pictorial honors with Adah Elliott, W9RTH, who was the first feminine ham to be licensed in Marion County (Ind). The story features the HAWKS, (Hoosier Amateur Women's KLUB) with a good play for the Young Ladie's Radio League (YLRL) a national with over 700 members and of which one of our W7's is Pres., Beth Taylor, W7NJS of Manzanita, Oregon.

The Quarter Century Wireless Association, Northwest Chapter, held a meeting of their Historical Committee on Saturday, August 16th, at the home of Harry Ubil, W7OHW, at Oak Harbor, Wash. A quorum was present and action was taken on a number of historical matters. Among others, it was unanimously voted to extend the museum facility which we have maintained at Pacific Electronic Sales Co., in Seattle, to embrace Portland, Oregon and Spokane, Wash. as well. Tentative arrangements have already been made with amateur supply houses in each city and it is hoped that these will soon be confirmed and you fellows will have a wider opportunity to inspect some of the old-time ham gear at one of the three places. More on this when arrangements have been completed.

W7's will soon have an opportunity to vote for both Director and Vice-Director, ARRL, for a two-year term. I would most emphatically recommend that considerable thought be given to your choice before voting. Radio clubs in W7-land can influence thinking along this line, and should. Consider carefully, both as clubs and individuals, what it is you want for your Division and which your chosen Director is in a position to swing for you. For example, there has been much talk of a Division Convention (we have not enjoyed one for several years); keep that in mind among other things when choosing your director. As your current Vice-Director, I want to make it plain right here and now that I am NOT a candidate for Director, nor for re-election as Vice-Director. The field is open...choose wisely, but WELL!

The usual lack of news submitted by any of the gang, has again made it necessary for me to pick it from 'thin air'. Remember, if you have something to SAY in this column, shoot it to me by mail or over the nets...be it from an individual or from any W7 club group...if it has merit as news, we'll work it in.

By the time you read this, your reporter hopes to be an 'armchair employee' of the U.S. Government. applying for disability retirement (a year ahead of normal time) on my physician's advice, and from supporting statements etc., looks like it will probably go through.

Sneaking pretty close to my space allotment for this month, so customary "73" and be with you next month.

ooooOOOoooo

Antennas

"Judge" WØLMB/7
202 S. 124th
Seattle, Washington

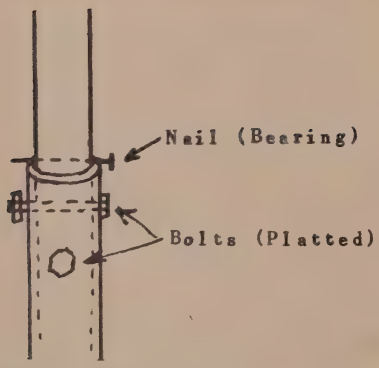


Fig. 2 Telescoping Pipes

There are all kinds of towers, but this one (Fig 1) has some features you may want to include in your next tower. I think the most important requirement of a tower is that it be easy to climb. The only thing at stake here is your life. (Small item, of course).

The "windmill" type of construction is easy to climb, strong and has lots of room on the inside for the prop pitch motor and the selsyn. If the prop pitch motor is mounted at the top of the tower there is a problem of putting it up there and another problem of taking it down if it needs some cleaning; however, if the motor is mounted at the bottom of the tower it is easy to get at and all the twisting torque of the beam is transmitted to the bottom of the tower. this eliminates the need for a lot of cross bracing as all the real strain is absorbed at the bottom. The guy points are made from 6 inch lag screws into 2x6 roof braces. Don't trust nails. This, of course, requires a long pipe to reach from the top of the tower down to the bottom. This would not be feasible of course if the tower was over 20 ft high. The prop pitch motor could still be mounted 20 ft or less from the top of a tower if it were higher than 20 ft. Many towers at the top are not large enough for a prop pitch motor. The pipe I used was a 21 ft. length of 2" I.D., 2-3/8" O.D. galvanized water pipe ($14.00). I extended it about 4 ft. above the top of the tower. This immediately lends itself to telescoping another pipe into it if you want to stack another beam (10 or 6 meter) or support the center of an Inverted Vee 20 ft. or so above your beam. This is a good idea if you have a limited lot--it was used very successfully for a 40 and 75 meter Inverted Vee back in South Dakota. I had one of the top signals out of

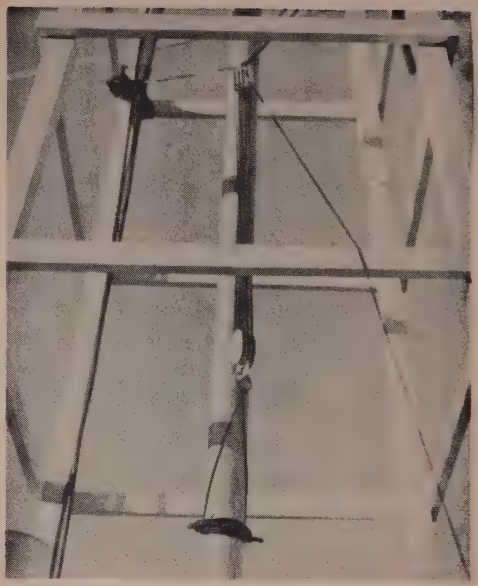
Fig. 1
Tower and workshop 10 & 20 meter beams at WØLMB/7. If it weren't for some power lines in the back I'd have 552 ft Vee Beams.

Fig. 3 Close up showing prop-pitch and selsyn.

the Middle West on 75 and 40 with these antennas and have the recordings to prove it. A complete Inverted Vee article with all the trimmings is planned for the near future. The pipe that I telescoped into the 2" water pipe was a 20 ft. length of 1-1/2" I.D. thick wall, hard aluminum, 20 lbs ($28.00, it hurt too). This telescoped 3 ft. into the 2" pipe when fully extended. I plan some experiments with stacked 10 meter beams (17 ft. apart) this fall. It is fairly easy to push the 20 lb aluminum pipe and beam from the platform on top of the tower. The main advantage of telescoping pipes is that the top beam can be lowered down to the top of the tower within easy reach in seconds.

A tip that will save you some agonizing seconds if you are trying to slip the pins in the telescoped pipes is to drill a small hole through the aluminum pipe and slip a nail into place. This nail rides on top of the 2" pipe as a bearing. Then drill your holes (two preferably) at right angles to each other to hold the aluminum pipe securely. The pin holes will then always line up after you have pushed the aluminum pipe up far enough so that you can slip the nail in. By all means do not fail to incorporate this feature. See fig 2. If you don't you'll be sorry! The 17 ft. piece of aluminum pipe is quite a spread; however, it will handle a light 10 meter beam such as shown in fig 1.

The prop pitch motor is mounted on a couple of pieces of angle iron which sits comfortably on the 1x4's. A "gold dust" pan is brazed upside down on the top gear to form a rain shield. The 110 volt selsyn motors are fitted with bicycle sprocket wheels and chain. I had mounts machined that would just fit the 2-3/8" O.D. water pipe and a shaft of the selsyn. Two strips of angle aluminum also support the selsyn. A tin can slips nicely over it as a rain shield. See Fig 3. The gold dust pan, the selsyn rain can, and anything else that will rust is painted with DeRusto.



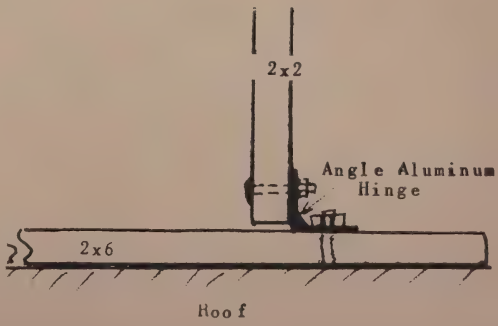


Fig. 4 Method of raising pipe for service of prop-pitch of initial installation.

Fig. 5 General construction, the extended steps & platform are shown here.

Fig. 6 A piece of 2x2x2 inch angle aluminum is used as a hinge between the 2x2 leg of tower and the 2x6 plank on the roof.

Fig. 7 The two hinge bolts can be seen. W7YMW is resting on tower after his effort. The 'heavy one' W7LAN seems satisfied. WØLMB/7 is getting another guy wire ready with the comments of W7YGN. W7VCB took the picture.

If the prop pitch motor requires service I simply hook my handy-dandy little block and tackle around the bolt which stops the 20 ft. aluminum pipe and at a point a couple of feet higher on the tower and raise the pipe. This is all a one-man job too. See fig 4.

The platform on top and the extended steps are a must. See fig 5.

The tower sits on two 2x6's which are nailed to the roof. The tower is attached to the 2x6's by a piece of 2x2x2 inch angle aluminum. One side is bolted to the 2x6 and a single bolt attaches it to the leg of the tower forming a hinge which is used when erecting the tower. See fig 6. Place a couple of the heavy fellows on the hinged 2x6 and the rest to tip the tower up with a couple 2x4's. If the 2x6 is bolted to the roof all hands can be used to raise the tower. Get all the help you can. See fig 7.

A word of caution: brace roof in attic with 2x2's underneath the tower in several places. The reason is obvious, Some cracking plaster back home in S.D. almost meant the death of my tower. The weight of the tower, etc., does not constitute the greatest weight. The guy wires pulling down and particularly in a wind storm tend to push the tower straight down with tremendous force.

The bearing I used was a plate of aluminum 4x4x¼ inch mounted at the top of the tower on a piece of 5-ply ¾ inch plywood. The 2-3/8 inch hole in the plywood and aluminum plate was made with a series of quarter-inch holes and a rasp to smooth everything off. The part attached to the rotating pipe is a 6 inch length 2½ inch ID aluminum pipe drilled and tapped for 10/32 inch bolts (6 of them) that screw against the water pipe. The 6 inch aluminum pipe (from the local surplus store) and the 4x4x¼ inch plate form the bearing surface. I applied Vaseline to lubricate it but it wasn't really necessary with the power my prop pitch has. See fig 8. An old car bearing would work nice if you could figure out some way to mount it. Remember if you telescope pipes you can't use a bolt through the pipe to secure the bearing. I didn't use any particular plan in building it other than keeping the horizontal steps no more than 2 feet apart so as to keep a comfortable step. I laid out two 2x2's 20 feet long on the basement floor in the corner and spread them 3 feet at the bottom and 9 inches at the top and started nailing on the steps. The spacing at the top between steps was 9 inches and I increased the spacing as I put on each step. Each 1x2 was glued and nailed. Use a fairly thin nail so you don't split the 1x2 step. After one ladder is complete lay the other 2x2's on top and start over. Paint the two ladders with three coats of a good boat paint. Then put the two together and paint the rest. Be sure the basement door is 3 feet wide if tower is 3 feet wide at the bottom. Mine was 34 inches (the door). I'll tell you about that some time Hi Hi!

I used four lengths of 20 foot 2x2's,

Cont. on page 32

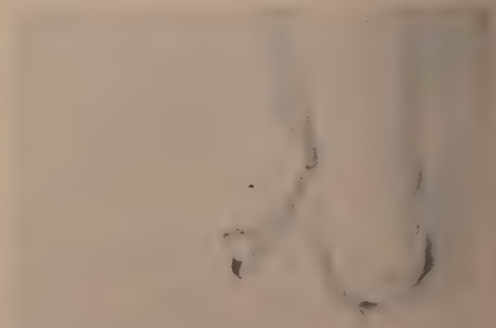
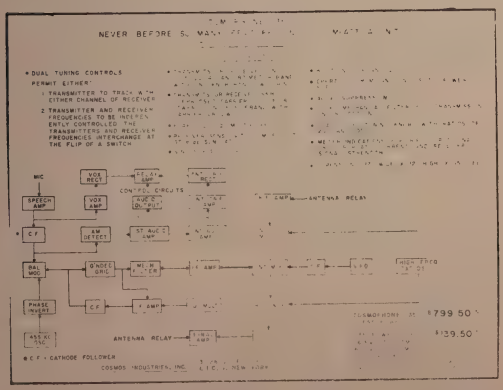


Fig. 8 Top of tower and bearing.

WHAT'S NEW?

By
Bill Thompson W6RRI
11159 Washington Blvd., Culver City, Calif.

I am now back on the SSB kick and with what seems to me to be one of the most unique pieces of gear produced so far. The manufacturer calls it the "Cosmophone 35" which is a Bilateral Tranceiver. The 35 is almost as convenient as having two transmitters and two receivers in the station as it is possible to transmit and receive on two different frequencies at the flip of a switch. If you want to monitor a frequency, set one of the tuning knobs at that frequency--then use the other channel to check over the rest of the band. Any time you want to check on the first frequency, simply switch to that receiver channel. The transmitted frequency is determined by the same tuning knobs that are used to tune the receiver. There are several ways to set up the "85". Transmitter frequency always tracks the receiver but you may use either channel to transmit or receive. In other words, you may operate the unit so that transmitter frequency is separate from the receiver and both VFO controlled.



Some of the specifications are: Coverage of all ham bands including 10,11,15,20,40 and 80 meters. Transmit SB, upper or lower, AM with one side bank, either upper or lower, or cw. The output is a single 6146, and I measured about 40 watts output on cw, and between 30 and 40 watts output (average) on SB. The receiver has a three kc mechanical filter and a peak or null "Q" multiplier. The receiver seems very sensitive and the manufacturer says one micro-volt for 6 DB S/N ratio. Vox and QT are built in and on transmission there is 40 DB suppression of the unwanted side band. Both the tuning knobs are dual speed with ratios of 20 to 1, or 100 to 1. The front panel meter reads: RF output, final grid or plate current, and receiver signal strength. This complete station is housed in one cabinet width is 17 inches by 12 inches high by 15 inches deep. The power supply is a separate unit about 12 inches on a side.

The unit I am using is a factory sample and came to me with no instructions but the gear is so well set up and simple to operate that I got it on the air and had a contact in less than a half hour. All the reports have been good and I have no trouble being heard all over the States on forty meters using a vertical antenna. I got several checks from the Pacific Islands and was Q5 in all cases. There are two antenna inputs and I did not bother to hookup change-over relay so during all my on the air checks, the receiving antenna was about 10 or 12 feet of wire on the floor.

This looks like one of the most complete rigs yet to be produced. For those of you who want to go SB and need both transmitter and receiver, this looks like the answer. As a matter of fact I want one of the "85's" so I can have a complete and separate SB station.

Don't let the price of $799.50 scare you. Remember you are getting both transmitter and receiver.

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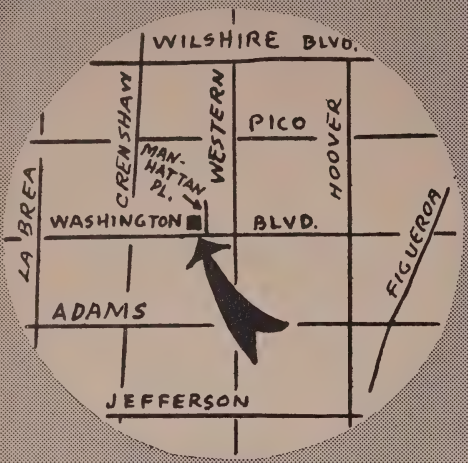

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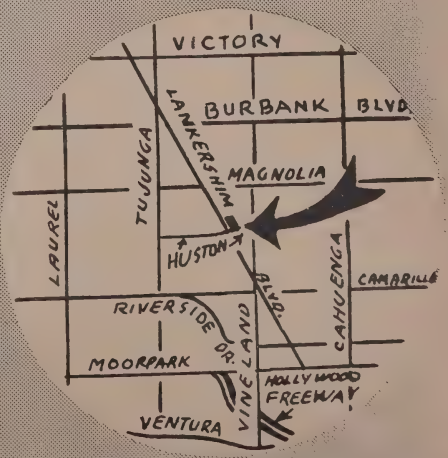

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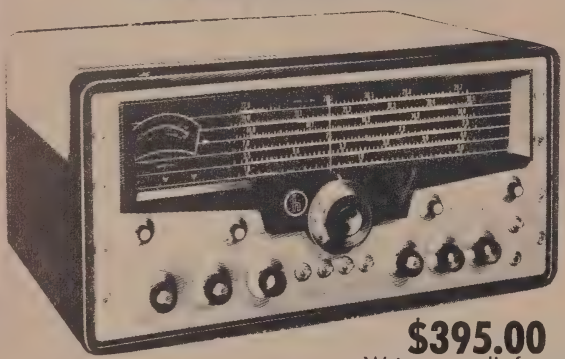

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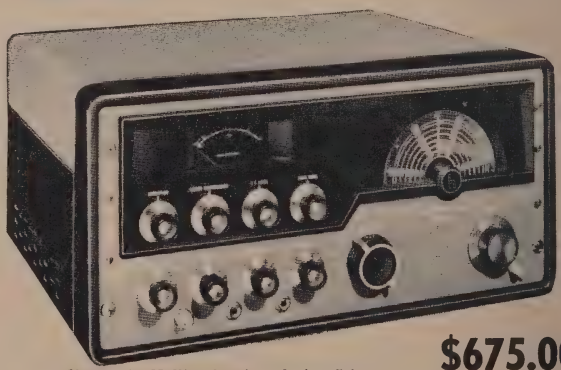

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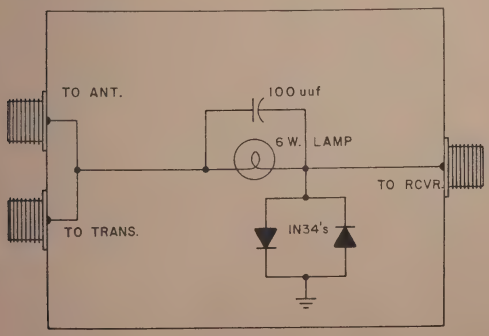
San Diego Zero Beat

Did you hear about the amateur radio operator who was so tight he went around turning the lights off in the shack every night to save electricity and then went out and bought a quart and got lit up? Well Bob Clark W6JYU, sez don't be like that guy, come down and spend your money at the 7th Annual Picnic of the Upper Ten Radio Club Sept 21st at Glen Park "Cardiff by the Sea". Family admission $2.00, lots and lots of goodies for prizes. If you have anything to swap bring that along also. Free drinks (soda pop) for all. W6JTU is new Pres. of the club and will issue a news sheet. The SD hi freq boys are sponsoring a 220 mc transceiver project to get more on the band, contact W6JTU for information.

W6WCH is building 420 mc gear, W6FFD and W6VTS both on the air with KWS-1's.

Pat W6GGX did a FB job running the HQ station set up for the Powder Puff Derby.



TR SWITCH

Know what, "Ye Editor" Mr. Art himself stopped in for a visit while in San Diego. Had a short chat and drove him down to the big city to see the place. He tells me he is putting up a 3 element full size 40 meter beam.

W6BLZ buys a Drake receiver, when it was delivered the man handed me a box. I thought it was just the speaker and wondered where the rest was until I opened it and saw what a dandy little job it was in the way of light weight construction.

W6GAH, Joe is off again with one of those philosophical ideas. According to Joe we wouldn't have all the interference from power lines if we had listened to Alva. Alva who? Old Thomas A. Edison himself, Joe tells me Edison put up a big fuss back in the old days to keep DC power lines but nobody would listen to him. Now look at the mess we are in.

W6MWU, Mary and Pat, W6GGX have been nominated for the National YLRL high offices. Mary to fill the 6th District Chairman and Pat for National President, how about that, both San Diego gals. Lets vote for them and see that they get the job...or lets you gals vote for them.

K6ESE sent me this little circuit for a TR switch months ago and indicates that it works very FB. I have not tried it myself but am going to pass it along. The R-F loss is very small and should work ok on 40 and 80 meters at least. I don't know if the diode action will cause TVI or not but those who are using it say they have had no trouble on the lower bands.

Around The Bay

Don C. Davis K6TKL
2335 Seymore Pl.
Hayward, California

Howdy----Chick has asked me to sub for him, as he now has too many irons in the fire. So we'll give it a try.

The sine here is Don, but better known as Luigi---We edit the Hayward Radio Club paper "The Chewed Rag", work 75 meter mobile as consistantly as possible, slave at the Rad. Lab. in Livermore as little as possible, hi! Thats 'nuff sed 'bout me.

This first time out I'm swiping a lot of material from the "Carrier", edited by Mary Lorenz. A real great club paper, and F.B. Editor.

Big item around the Bay lately is---what about the six thousand bux in the Central Calif. Radio Council surplus treasury??? Last meeting was held at QTH of W6LGW, Pete Peterson, in Alamo. Discussion centered around the six thousand surplus from the San Francisco Convention. Some would have it donated to various charities. Others would like to see it used as a "Back Up Fund" for member clubs use in putting on Hamfests, Auctionfests etc. If your club has not made an issue of this item, better get it on the agenda so your Rep. can go to the next meeting with your clubs views. Remember, its your dough too.

By the time this is in print, the Hayward Radio Club will have had another of their famous Auctionfests--combo hamfest and auction. We'll try to have some embarrassing pix, hi! Incidentally Bill Paull, K6SWY, in charge of the affair just put up an eighty foot tower, loading it on 75 meters. Trying DXCC on 75m, Bill??

Twelve members of the HARC recently graduated from the Auxiliary Police training school and are now busy setting up equipment and nets. Also flashing their badges at busy intersections. All twelve members are hams and will form the nucleus, of the auxiliary communications for C.D. in Southern Alemeda County. Wanna join 'em? Call JE 7-8332.

Another CD effort is going on at Martinez; The city is now officially linked with the hams with its own station, call is K6DKZ, located in the city offices. Norman Abramovice, K6DKZ, is Coordinator of Martinez Civil Defense and Disaster Council.

Among the club papers around the Bay, we note some of the newer ones. "The Short Circuit" by the "Silverado Six Shooters" of Napa, looks real good, especially the section called "Loose Connections". Their address is: 70 Hoffman Ave., Napa, Calif. Don't know who the Editor is, but suspect it's Bill Southwell, W6OJW.

Another just starting is "The Lark", Livermore Amateur Radio Club. As yet yours truly hasn't received any copy from them, but we have hope of getting on their mailing list. How 'bout it fellas?

OPP'S DEPT. Clarence of the Hayward Electronics, when asked where he was going on his vacation, stated that he was going to stay in the store, XYL was going to Michigan for "his" vacation...

Dusty, K6MPN, editor of SCARS, advises of a Family type picnic scheduled for Sept. 7, $1.00 a head for people and hams over 11 years old. Lots of prizes and a 30¢ rebate on the buck, for pop, hotdogs and beer, but bring your own picnic lunch as 30¢ won't buy many hotdogs, hi! These family style Hamnics go over big with the XYL's and the OM's can ragchew to their hearts content. See you there?...Where?... Huddart County Park, behind Woodside.

All clubs please note: If you want to get some item, general interest, in Western Radio Amateur please mail to 2335 Seymore Pl. Hayward, Calif. If you have some real hot gossip, you know, embarrassing to some one else, humorous to you, call me on the land line at JE 7-8332. This is a new venture for me and I need all the help I can get. So your cooperation will be mucho appreciated.

Well, that should tie it up for this time...

73 Tea Kettle Luigi

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OPERATION BLACKTOP

Bob Dailey W6UKC

Approximately 400 members of the Los Angeles County Sheriff's Disaster Communications Service will participate in their second major mobile drill of the year on Sunday, Sept. 28, 1958.

Known as Operation Blacktop II, the drill is designed to test the ability of the amateur radio operators of the county's Radio Amateur Civil Emergency Service (R.A.C.E.S) to activate in the 15 districts of the county and move over large distances while maintaining radio communications such as would be involved in any civilian evacuation problem.

All geographical sections of the county will be represented and communications will be tested on reliability from points at sea level to the top of Angeles Crest Highway with all mobile units converging at Chilao for a critique, followed by recreation and a picnic lunch.

The Sheriff's Disaster Communications R.A.C.E.S. group is the largest and most active civil defense communications group in existence with amateur radio operators in all sections of the county organized at each Sheriff's Station, at La Puente, Catalina Island and the County Information Center in Los Angeles.

The amateur radio operator volunteers provide a system of radio communications which cannot be equalled in mobility and flexibility and they devote many thousands of hours each year in preparation for emergencies and disasters, at which times their forms of communication are invaluable in linking the county's disaster services together.

All other areas within the county are invited to participate in the drill and are asked to get in touch with Howard Shepherd Jr., W6QJW, at Madison 9-2104 to make necessary arrangements. Several areas have already indicated they will be participating.

****

EDITORS LOG from page 2

business or pleasure. This ought to be a tremendous band for the transistor boys. With maximum power of 5 watts transistor rigs can come into their own. I think it might be appropriate to award a WAS for 11 meter Citizens band contacts, etc. We might even find a few of the more determined types coming into the ham ranks from the 11 meter band. After all, I can visualize times when the QRM could get rather sticky with SB and sharp receivers etc being used by experienced hams as opposed to a simple AM x-mtr and TRF receiver on the same channel.

The only other requirement worth mentioning is the antenna restriction. *"A permanently installed antenna shall not exceed 20 feet in height above any man made structure (or natural formation) on which it is mounted nor shall the feedline be more than 25 feet long."*

IRAC

Further investigation on the topic of IRAC getting all our bands above 200 mc brings to light the following information. One of the prime reasons and the one most mentioned for the frequency transfer is that the military needs our bands for telemetry. It seems they don't have the space available in their bands for all the bandwidth necessary for the many complex telemetry systems used in missile research and rocket development, etc. To this self implied lack of frequency management I have the following to offer.

In a paper read this month at the South Eastern IRE Convention, Hycon Eastern demonstrated how one system of FM/FM telemetry can achieve up to 200 channels in a 40 kc bandwidth. Further more, crystal controlled transmitters and receivers may be utilized as well as single sideband methods, et. al.

What this states, in effect is that if the military used this type of system, they would have more than space in their own bands to take care of their requirements. It's like saying IRAC should have the entire frequency spectrum for a spark transmitter cause they don't know how to build a vacuum tube crystal controlled rig. But rather than develop the state of the art to utilize existing channels, as we Hams always have done, the military proceeded to grab off 99% of our bands on the pretext that "no other method exists" to do the job. I talked directly with Hycon Eastern who developed this system, and they told me they could have developed this system three years ago had they been requested to.

Original research was first done about that time.

The net effect of the above is that no valid reason exists why IRAC should continue to have control of our bands. The state of the art is such that with sound frequency management, telemetry systems can be built to stay within the IRAC frequency allocations and they shouldn't be allowed to have our bands.

Next month I shall discuss the argument that states we should share our bands with the military to protect us from anyone else grabbing them off. The idea being that as long as "uncle" is there, we don't have anything to fear as we are the only ones that he *will* allow. Note the wording carefully... *sharing our* bands...and *he will allow* (on *his* bands).

CONVENTION

Don't forget the San Diego Convention Oct 10th through 12th. See you there?

ACTIVE GUIDANCE

When does a man get to rest actively? What is it that we work for during our years of active, creative effort? To some it is to retire and take it easy but somehow they don't last too long. Yet new men, young men need opportunity too. The same as our leaders did many years ago. Too few of us ever become wise enough to remain and guide the young around the pitfalls they must face. The balance of experience and time must always be at hand to act as a moderating influence on the young.

Where do we find such men? Perhaps he is next door, or...could be he has worked long years for his employer... for his charity...his church.

Can we ask him to retire? Can we say "Go to pasture, live your remaining years in complete happiness. "No! none of us can ask that." But where does it stop? When do we get the younger men. How can we grow stronger, more vital, and progress.

This problem is faced by every business. Our government, even our churches face it. What we need is "active retirement". The release from day to day pressure. But activity in the form of advise, guidance, council. "Active retirement" is the feeling of being wanted and being needed by others. No greater enrichment of life exists.

Do we face this problem?

73, Art, W6IQJ

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 from page 22

Fig. 9 Tower back in South Dakota.

about 80 feet of 1x2's, 30 feet of 1x4's and 10 feet of 2x6 plank. The 1x4's are used for the bottom two steps (especially the prop pitch motor supports) and the top step and platform. Cross bracing was used only between the bottom three steps with 1x2's and laths at the top. The total cost of paint and lumber was about $25.

Fig 9 shows my tower back in S.D. A 16 foot length of 1¼ inch water pipe was used with an 18 foot length of 1 inch water pipe telescoped in it. 1¼ and 1 inch water pipe are the only two that will telescope in each other snugly. The 18 foot length of 1 inch water pipe wasn't too easy to push up either. I later installed a pully up at the top of the 1 inch pipe so that I could raise and lower the center of my Inverted Vees (feedpoints) to the top of the pipe or down to the top of the tower. Note the large sheet of tin as a rain shield. It didn't work to hot as the wind would catch it and twist and crack it. The bearing was mounted about 4 feet above the motor in such a way that I could disassemble it. this feature worked fine but a bearing on top of the tower works better and is easier to handle. The selsyn was driven by a heavy cord. A piece of hard wood was wired to the selsyn and clamped to the 2x2 after the slack was taken up in the drive cord. It worked fine if a complete loop was made around each shaft. If slippage is experienced wrap friction tape around pipe and/or selsyn shaft. Of course both must be of the same diameter. This is a simple way of doing it, I like the bicycle sprocket wheel construction better. The prop pitch is mounted with two lengths of angle iron. Only two nails are required to keep motor centered, one on each side through a hole in the angle iron into the 1x4's. It's a good idea to drill a small hole in the bottom of the can over the motor so that accumulated moisture can drain out.

. . . . . .

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. . . WITH THE YOUNG LADIES

JEAN Kincheloe K6OQD
6625 N. Brightview Dr.
Glendora, Calif.

Somebody suggested that I try my hand at writing a YL column for Western Radio Amateur. If I find out who it was, he'd better start running! The success of this venture depends on three things; 1) approval by the Editor and Publisher, 2) approval by you, the reader, and 3) the amount of material sent to me to include herein. This is not meant to be a column for just Los Angeles or California but for the entire West Coast. So all you other gals, PLEASE send me news. The District Chairmen of YLRL could help out a lot.

Vacation season being in full swing, a lot of the gals are either about to leave, have left, or have just returned from vacation trips. Harryette, W6QGK, visited her and the OM's families in Missouri. I worked Harryette from Mary, 9RUJ's, QTH on 20 meters. I'm going back to 2 meters where there is more room, hi! Pat, K6PFY, and family vacationed (?) in Iowa where they got caught in a flood and lost their car and most of their belongings. Pat's OM, Howard K6PFX, managed to hang on to the mobile gear while spending the night perched on a tin roof. Tough luck people but glad you are back safe and sound. Next time stay in California. I mean, why go all the way to Iowa when you can get flooded out right here in California! Frances, K6EJE, just returned from a trip to Europe. Lucky girl! Rosemary, K6ACF, and family vacationed in Tucson, Arizona (against her will, says Rosemary.) As the sign on a church in Tucson says, "you think its hot HERE". Welcome home to Martha, W6QYL, after a long stay in Lebanon. We're all happy that Martha and her OM, Noel, got out of Lebanon before the situation got so sticky over there. Hope to see her at the LAYL meeting in September.

By next issue, if I'm still here, I hope to have full information on the 10, 15 and 20 meter YL nets; when they meet, frequency, etc.

If anyone has any ideas for a name for this column, all suggestions will be carefully considered. Anyone with suggestions or newsy items will find me in the Call Book. See you next month.

****

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W6BLZ LINEAR from page 11

high capacity, 24 mfd, which I have been able to locate on the surplus market. If you are skeptical, or don't like the idea, I suggest two 8 mfd, 1000 volt oil filled types. they will go in the space. It is better to get all of the capacity you can, but 16 mfd will work o.k. It is true there are new 24 mfd, 1000 volt, condensers the size of the 330 v job, but are mostly out of the range of our pocketbooks, and the 8 mfd jobs are about a buck apiece.

There are tuning procedures for tuning linear amplifiers. I always do evrything wrong and try to stay well below maximum limits. To tune, I generally feed enough excitation to see a little grid current indication on the grid meter. Then with the two 4-65's in place with the filaments on and plate voltage off, I neutralize the amplifier. I do this by terminating the antenna output with 50 ohms and rotate both tuning condensers for maximum indication of output feeding through to the tank coil, holding a F.S. meter up close to it. Then by tuning the neutralizing condenser I tune for a minimum of R-F feed through. Before turning the plate voltage on it is best to check both tubes separately. With one in place, set the no signal plate current at 30 ma by adjusting the bias. Then take that tube out and plug the other one in and see if you get the same conditions. If there is too much variation it twould be wise to get two tubes more closely matched. Production tubes should be close enough together. You see it would be possible to pick up some tubes at a *sale, or used,* and have one tube more sensitive than the other. During operation one tube might be operating class AB-1 and the other cut off, or enough different in operating conditions, that you would not have a linear amplifier. This has been an argument for using one tube in a final. However, with good crisp new tubes from a reliable store selling Eimac tubes, this should never be a problem.

When both tubes are in place and the bias adjusted so that the no signal plate current reads 60 ma, you are in business. The bias at this time may not read -100 volts, as shwn on the charts, but less. This depends on the screen voltages, etc., as the chart was made up using 500 volts on the screen for AB-1 conditions.

Before buttoning things up a 0-100 ma meter should be placed in series with the ground end of the OA-2 series gas tubes

and current checked to see that the current is not over 35 ma and not under 10 ma when a load is placed on the amplifier. The meter can then be removed. The OB-2 should also be checked using the same method in the range 5-25 ma, depending on R-2 and the output rating of the transformer.

In the event C-13 is not enough capacity for 80 meters a switch can be added and a parallel mica 500 uufd or more hooked in. There are plenty of these r-f, bdc, condensers on the surplus market if you shop around .

Warning No. 1—when pushing tubes into the socket, look underneath and see that the pins are going into the pin holder springs o.k. Some new sockets are stiff.

Warning No. 2—Mount *tubes vertical* and don't operate amplifier on its side with plate voltage on.

I think I have mentioned most everything. If not, send a self-addressed envelope so that I don't go broke answering mail. Or listen to it on the air, SSB of course, 3801.5 kc. Sounds good on CW too. I don't know about AM, I never use the stuff.

— AR —

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AMPLIFIER from page 8

nected from one voice coil terminal to the base electrode of input stage V1. The other terminal of the voice coil is then connected to the positive battery terminal.

In the event oscillation occurs, or treble boost is produced, the two feedback connections to the voice coil must be transposed. Of course, such results are not readily measurable, and to a considerable extent are a matter of subjective evaluation. However, one of the significant things learned during experimentation is that frequency response appears to have a much greater effect upon the "quality" of the emergent speech than the rectification produced by the output stage! As a consequence, if this amplifier incorporates good transformers and a quality speaker, the acoustic impression of speech on the ear will be more pleasing than is provided by some hybrid auto radios in which insufficient pains have been taken to obtain a reasonable response, particularly of the lower frequencies. Loss of naturalness due to rectification alone is much less offensive to the ear than the distortion resulting from limited frequency response.

The author used experimental transformers for T1 and T2. A suitable commercial transformer for T1 is the Stancor Model TA-11. This transformer has a 48 ohm center-tapped primary and a tapped secondary providing either eight or sixteen ohms. Use the entire primary as load for the driver stage, disregarding the center-tap. The eight ohm secondary tap should be used to provide excitation for the base-emitter diode of the class "B" transistor. In general, transformers having impedance ratios between six and ten to one, secondary ohmic resistance less than two or three ohms, and sufficient primary inductance to give satisfactory gain at several hundred cps. are suitable for the circuitry function of T1. For example, it was found that a filament transformer having six volt and two and one half volt windings produced acceptable performance. The six volt winding was used as primary, whereas the two and one half volt winding served as the secondary. The Triad Model TY64X output transformer, which is suggested for use as T2, also serves admirably as T1. The only objection here is that the physical size of this transformer is considerably greater than need be. In the event it is used for T1, the thirty two ohm winding is used as the primary and

the 4 ohm section of the other winding is employed as secondary.

The output transformer presents somewhat of a problem. The Triad Model TY 64X works satisfactorily, but this transformer is rated for a maximum primary current of six tenths of an ampere. The maximum current consumed by the output transistor during speech peaks is about twice this value. There is little danger of burn out inasmuch as the average current of this amplifier is low enough to prevent appreciable temperature rise. The author was primarily worried about distruction due to core saturation. However, the listening quality of speech was quite good. The center tap on the primary of this transformer is used in conjunction with one end terminal to provide impedance transformation of eight to four ohms, assuming a speaker with a four ohm voice coil will be used. After having made up several experimental output transformers, the author was not able to obtain any significant performance variations provided the impedance ratio was between two and four to one. Here again, a filament transformer with six volt and a center-tapped six volt winding fills the bill. In any event, some enginuity may have to be excercised due to the fact that there is an obvious lack of commercial transformers having the requisite parameters.

Due to wide tolerance on transistor current amplification factors, it may be necessary to experimentally determine the best value of R2. R2 should be selected to produce a no-signal collector current in V1 of about forty milliamps. Start from a higher value than that prescribed for R2 in the parts list and gradually work down to a value which produces the suggested collector current.

It is felt that the constructor will share the author's conviction, that for some purposes, the single ended class "B" audio amplifier manifests features of performance and economy which makes it a more desirable design approach than the single ended amplifier operating in class "A".

— AR —

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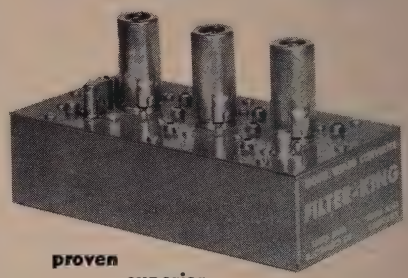

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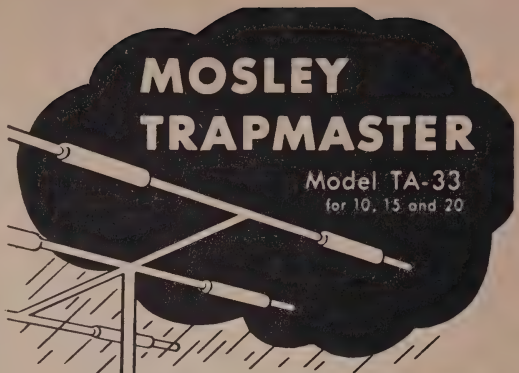
 from page 5

Fig. 1 corresponds to TP 3 on the printed circuit board. Depress the key and adjust the coil slug for maximum deflection of the meter. The voltage reading will be in the order of -22 volts. This reading will vary with the type of meter used. Disconnect the VTVM and the rig is ready for operation.

Connect an antenna to the transmitter. A simple half-wave dipole made of No. 14 copper wire and fed with 72 ohm twin lead is an inexpensive and very satisfactory antenna. However, if a more elaborate antenna system is desired, one of the amateur handbooks may be consulted. In tuning the pi tank, the following proceedure should be used. Depress the key, and tune the loading capacitor for maximum capacitance (plates fully compressed). This is C2 in Fig 1. Tune the resonating capacitor (C1) for a dip on the 0-100 ma. tuning meter. Load the antenna by reducing C2 in value. Re-dip with C1. Continue this operation until the current reads approximately 45 ma. The rig is now ready for CW operation. Good "DX-ing".

— AR —



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DX REPORT from page 18

the air. This transmitter will be used in the Czech expidition mentioned earlier in this column.

CE3AG informs us that the Island of Juan Fernandez (Robinson Crusoe Is.) is now officially a separate country. Luis, CE3AG, may go there in December with possible call of CEOZZ.

We heard W2CTN arranging deal to handle QSL's for VQ3CF.

ZL3VB, Chatham Island (Now a new country), should be on 14 mcs by October 1st. Very good CW man.

OVARA "ETHER WAVES" reports that ZL1ABZ, Kermadecs, now has a 14 mc rig and will be on that band for at least one week before returning home. 9K2AQ, Kuwait, is now back home as G3FJU. 9K2AN is on cw from Kuwait while 9K2-AP runs SSB but should be on leave in G-land now. 9K2AZ is active on 21/28 mc phone.

ET3GB will QSL only upon receipt of International reply card, properly filed out so that all he has to do is sign it.

PY2CK writes that he will be on Trinidade with PY1CK/PYONA and PY7 AN/O on the first week in September. His call is PYONB (If we know our PYO considerable delay will occur—!)

Via West Gulf Bulletin we see that ZS6-AQQ will operate from ZS9-land for three days starting Aug. 30th and using SSB. QSL via W4IYC with SASE.

PYONA QSL's should start flowing September 1st. Flavio said ARRL would accept cards October 1st. ZL1AAX, Les, is donating SSB gear to ZL3DX for use on Chatham Island. ZL3DX arrives Chatham about August 22nd (estimate). Don't pass up "4UZA" he operated from the UN extra-territorial ground (2 miles long in Geneva. This might be given separate status.

Danny and YASME II are due to leave KV4-land for St. Kitts on Monday, August 25th. The 100 mile trip (against prevailing winds and current) should take about 20 hours and he should be on the air Wednesday, August 27th. After a ten day stay he will proceed to Antigua and Montserrat.

As Danny's West Indies tour takes place in the Hurricane season (July 25th to October 25th) a very watchful eye has to be kept on weather conditions and the quick availibility of snug harbors. Antigua has a good "hurricane hole" but shelters at other islands leave lots to be desired.

— AR - -

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 from page 14

mixing twice to get from his 9 megacycle beginning. Pictures, and maybe an article next month.

Another Northern California path has been broken down on 220 and we are proud to report that your conductor was present when this path was accomplished. K6ERG, Carmichael, some ten miles NE of Sacramento, has been 220 conscious for months, but on the evening of August 11, he became doubly aware of the potentals of this segment. Using a W6SUE version of the 220 converter, Rick made it cross band to K6RNQ, Oakland, a distance of some 80 miles. Oh yes, the 220 "antenna" was the 4 element six meter array, some 70 feet up. Next project, says Rick, is the erection of one 4 array BOX of yagis, also some 70 feet above the grass roots. A 6360 rig is working now, into a dummy load.

432 NEWS

Mac, W6CDT, has moved to a new hill top location in the southwest portion of San Francisco and is working towards getting back on the band. Plans in the mill include a code wheel to be run at prescheduled times beaming towards Southern California, with initial trys to be made with W6FZA (come on Al, get the gear finished) and possibly W6BUT.

Sandy, W6NTV, Turlock, has been very successful with 432 trys into the San Francisco area, using 50 watts into a ground plane. A new super signal squirter is ready to go up the tower.. if and when he finds someone to climb the full 100 feet!

Dick, W6SUE, Oakland, has several very nifty silver plated trough lines with special machined sockets for the 416B tube as a part of the unit, teflon feed throughs, etc. Sitting idle in a shack drawer (stay away RINQUE). He made up a batch of eight when fashioning his proto type 432 converter shown in the August column and now makes mention of the fact that anyone interested in same drop him a line.

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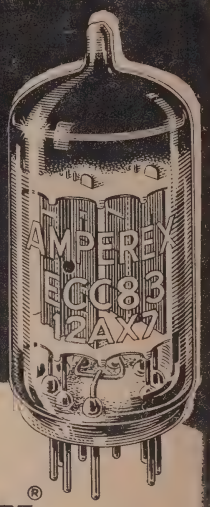

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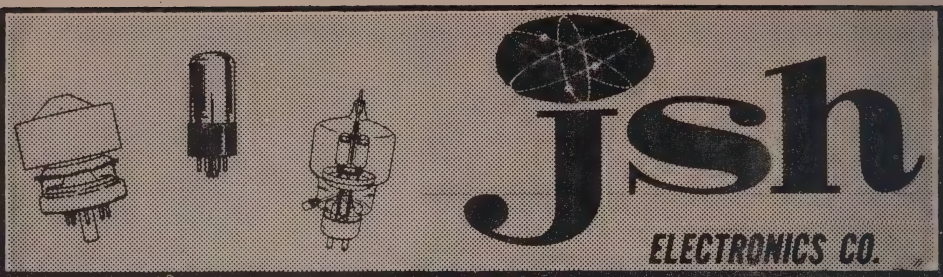

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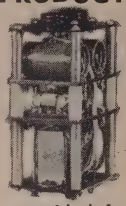

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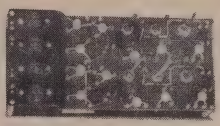

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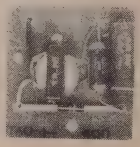

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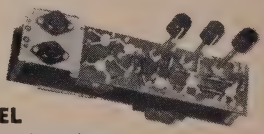

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QSL's Newest Designs glossy stock 2 colors 100 for $2.50. Free sample Brochure. One week service. Box 671, Hawthorne, Calif.

HANDLING TRAFFIC? Two bucks brings you the Pacific Area Net News for one year. Vic Gish, W7FIX, 511 East 71st. Street Seattle 15, Washington.

FOR SALE: KWM-1 $720. AC Power Supply $110. KWS-1 $1500. SX-71 $140. SX-28 $90. PMR-7 mobile receiver $95. Morrow FTR and 5BRF with 12 volt supply $110. AF67 and AC supply $135. S40-B $65. HT-9 $90. All units like new. W7HCJ, 308 N. Locust, Spokane 62, Washington

Custom SSB exciter, xtal phasing and xtal lattice filter, DC VC and carrier injection for 75 meter phone. Seperate VFO final. Can use a deluxe 2 meter communicator or? Al Liblick, W6FWU, 116 Via Colusa, Redondo Beach, Calif. FRontier 5-1116.

FOR SALE: Globe Champ 300A, $350. Hy-Gain Tri-Band 3 element beam. $75. Morrow MBR5 receiver. Morrow MB560 transmitter complete with microphone, cables, AC power supply and mobile power supply, $425. NC183D, $225. M.C. Mandella, K6RIH. OXford 5-6700. 9633 Abbotsford Rd. Rivera, Calif.

USED HAM GEAR: "Cured and unsmoked"; Syd's Electronic Exchange, Cupertino, Calif. Call CH 5-0400.

ESTATE SALE: Johnson Viking KW and desk; matchstick antenna; push to talk mike and stand D 104. Make offer. Phone EMpire 2-9872 after 5:30 PM or write F. Robinson, 15850 Lemarsh, Granada Hills, Calif.

Trade for good SSB exciter 150 watt PEP or sell Collins huge modulation trans. for 450th's 2 KW audio $90. American plate trans. sec. 6200 volts ct 2½ KW, primary 110 volts 60 cycle $40. Choke 12 henry 500 mils $5. Choke one henry 800 mils 25 KV ins. $4. Pole peg 3 KW 2400 volt to 110-220 vac pri. $15. 24 volt eigth hp motor with intergral gear box for beams $4. 5 volt 60 amp. filament trans. $8. Rotary tower base for crankup towers, turn entire tower $20. 304TL's $8.50. 4-125A's $15. 4 inch mahogony plywood pole sections $2. per 11 ft. section. Sequence keyer for 32V or like, 6 tubes commercial built sidetone monitor and screen supply for 32 V or like $30. Split stator condensers transmitting $5.-$10. dynamotors W.E. 28 vdc input 475 volts at 250 mils out $3. TBW transmitter 3mc to 18mc 200 watts $25. Power supply 2500 vdc at 400 mils $35. R.D. Mace, 8600 Skyline Dr. L.A. 46, Fone OLfield 4-3714.

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522 w/rack mountings, 2 & 6 meter coils, extra pair 832's, $20. Pair 828, $5. Mike Gauthier, K6ICS, 10425 San Jose, South Gate. LOrain 9-1865.

FOR SALE OR TRADE: Dickerson electric guitar with everything, $75. Or trade for ham gear, test equipment, etc. Mike Gauthier, K6ICS, 10425 San Jose, South Gate. LOrain 9-1865.

PE-103 $20. Gonset super six converter $35. Master Mobile 10-40 coil $5. Complete antenna for 40; 3 ft. base section Davis Hi Q coil and 5 ft. whip $10. OXbow 8-1976. 630 E. High St., Whittier, Calif.

FOR SALE: Central Electronics 20-A SSB exciter with QT-1 like new $175. Gonset Communicator IIB 6 volts with xtals, GP, mast, coax F-1 mic $175. Cesco deluxe phone patch $10. Shure 777-A mic, new $10. K6KUQ, Dick, 6455 North Golden West Ave., Arcadia, HIllcrest 7-8937.

Will trade new or used ham gear on 8mm movie equipment or what have you? Jim Wood, K6BXW, Days PO 2-7146, eves PO 5-5149.

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WANTED: ICA black plug in coil forms 5 and 6 prong. If you know of any store having them write W6BLZ, 528 Colima St. La Jolla, Calif.

STRIKING! NEW! SCENIC QSL's. Sample 10¢, refundable. Camas Press, 3005-VC, North Hollywood, Calif.

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BUY OF A LIFETIME: Viking Ranger, factory wired used one month. Cost $340 Absolutely flawless. Not a scratch. $215. DX100 five months old perfect condition, all new tubes. $185. SX-96 has SSB, like brand new, cost $258. with speaker $175. D-104 mike used one month with stand $15. 3 Japanese mikes, crystal type, all new. $4. each. 60 ft. Donner crank up tower $60. Gonset Bow Ties--10-15-20 meters $15. each. 6-6146's new, $4. each. Equipment like new. Perfect condition. DIckens 4-1736. 6803 Amestoy Ave., Van Nuys, Calif.

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FOR SALE: 10 meter, 3 element Hy Lite beam $10. 20 meter, 3 element Hy Lite beam $20. Crestwood model 400 tape recorder $45. W6VCM 812 Inverness Dr. Flintridge. Sylvan 0-4684.

FOR SALE: DX35 with Heath VFO $60. Hilli S-77A receiver with S meter $60. OS 6-8561 or write Gene Schouweiler, 4821 West 140th, Hawthorne, Calif.

FOR SALE: W.E. 16 mfd. 1000 volt condensers $1. ea. Dynamotors, 24 volt input, two 1100 volt 400 ma. $7.50. ea. 1000 volt 300 ma. $6. Two PE 94C's $6. ea. 224 volt 70 ma. $1. Three 300 volt 200 ma. $4. ea. Several new 3 tube pocket radios $8. ea. 4 tube portables $10.50. ea. Two dual section calibrated variable cond, H.V. type, $2.50 ea., or write for more details if desired. Lowell E. Robertson. 1983 Via Del Rio, Corona, Calif.

LAKESHORE PHASEMASTER II: Brand new, never on the air, 10 crystals, $235. Hexacon 35 camera, 58mm F:2 preset, 250mm F:5.5 preset, case ext tubes: excellent condition $140. Webster-Chicago wire recorder $25. W6BSC, Box 547, Santa Barbara, Calif.

WANTED: Peerless 650 watt modulation transformer model M-2121-T or equivalent multi-match. Approximate size 6½x7½x9 inches. AT 6-1595. J.E. Bush, 9861 E. Estrella Ave., Temple City, Calif

WANTED: KW AM rig 80 thru ten, stable and reasonable. Specs, price first letter, Tom Hardy, W5MZP, Box 84, Hardy Arkansas.

FOR SALE: Collins ART-13 transmitter, unmodified. Excellent condition, cost new $1200. Sell $95. BC-312 receiver, 12v, like new $48. I-177 tube tester $30. Amprex 5894 $10. 4-65A $9.50. 4-125A $12.50. 832A $4.75. 3E29 (829B) $6. 811A $3.50. 872A $2. Tubes new. ART-13 modulation transformer $8.50 All guaranteed. Bill Slep, W4FHY, Box 178, Ellenton, Florida.

BC-751A VHF transmitter 300 watts input 6 or 2 meter. 4E27 push pull final 807 modulators 115v 60 cy supply $95. George Fisk, K6TAM. POplar 5-9683. 7724 Tujunga, N. Hollywood., Calif.

MUST SELL: HT 32 Hallicrafters SSB transmitter used 2 months. Excellent shape and working order. Will go at a low price. Stancor 203A mobile transmitter with VFO 10 meters. Uses 2E26 or 6146 final. Compact with lots of parts. FRontier 4-2533, evenings. W6WMB Stan Anstett, 344 31st. St. Hermosa Beach, Calif.

Have 3D Stereo projector and screen TDC by Bell & Howell (projector or viewer combination) Can use a deluxe 2 meter Communicator. Al Liblick, W6FWU, 116 Via Colusa, Redondo Beach, Calif. FRontier 5-1116.

SELL: Bud 8¾ standard rack panel cabinet UTC S-19 mod. xfmr Knight RF bridge National "AM" dial Stancor and Thordarson LV power supply parts. Also many other good parts such as variable capacitors audio xfmrs carbon mike cabinets. Bargain prices. Write or call K6VJE. HIckory 2-1887. La Mesa, Calif.

TG10-J Keyer $19.95. DX20. $24.50. Downey Electronics, 8802 E. Imperial. TO 1-13416.

HAMS! Make every QSO a solid one with a custom antenna. Custom made to the frequency of your choice!! 80-40 meters $11.50. 20-15-11-10 meters $9.50 Specify either dipole or folded dipole. Each antenna is supplied with 35 ft. lead-in (72 ohm coax for dipoles or 300 ohm twinlead for folded dipoles) and necessary insulators. This is not a kit. Complete-ready to go on the air. All antennas shipped prepaid. When ordering please specify frequency desired. No C.O.D.'s. Send orders direct to: Seymour Enterprises, P.O. Box 2046 Downey, Calif.

MASTER MOBILE ITEMS FOR SALE: 8' stainless whip $2. 5' stainless whip $1.50. Heavy duty spring base $3. All items excellent condition. John, K6OZV HI 7-5164.

Hy-Gain 3 element Tri-Band beam and special Donner 60 ft. tower with platform with guy rings. Insulated guy wires with large turnbuckles and snap hooks, all top quality. Sacrifice $125. Phone Bill Taylor, W6QHQ, SYcamore 6-1285. Pasadena. Calif.

1 K.W. SSB rig thru 80 M. 20A exciter, builtin VFO, 150W G.G. buffer, parallel RK65's in final, built in scope, ant. relay, Pi section output in both buffer and final. All in a 34 inch Bud cabinet. Separate 110/220 remote control power supply adjustable from 1200 to over 4000 VDC at 500 ma. using 866A's or 800 ma using 872's. Plus an adjustable buffer supply of 500 to 1000 VDC at 300 ma. Owner W6DSX moving to small quarters in Northern Calif. Will sacrifice for $375. or will trade plus cash for compact 100-150 W rig such as 32V, HT32, etc. Phone Tom, K6KFI, ELgin 5-6340, Sierra Madre, Calif.

FOR SALE: Gonset Communicator III, 6 meter, 6 or 12 VDC 115 vac. Gonset VFO, 6 or 2 meter Gonset II linear amplifier, 6 meter. This equipment is only two months old. It looks like new equipment. Will sell it all for $400. Write to Dana B. Wood, P.O. Box 301, Thermal, Calif. KN6AHM.

Closing out several lines of surplus equipment to make room for full shipments of amateur equipment. We stock ALL lines of amateur equipment and do all types of electronic repair and servicing. Receiver alignment and transmitter repair our specialty. Marine service-FCC licensed. Store hours 9 AM to 6 PM weekly. 9 AM to 9 PM Friday thru Sunday. Bowie Elec- 745 E. Holt Ave., Pomona. NA 9-6056.

FOR SALE: High power kilowatt modulator. Complete with 304TL's and RCA modulation transformer. $50. Also 2500v 500 mil power supply with Thordarson transformer 115v primary $25. W6NOT, Bill Wallace, 8804 Lookout Mountain Ave., L.A. 46. Telephone OLdfield 4-4285.

WANTED: At least 400ufd 2500 volt oil filled capacitor. More capacity OK Will pay cash. Don Stoner. P.O. Box 137 Ontario, Calif.

WANTED: Elmac PMR 7, AF67, and 6v power supply, coil. Cash! State lowest price. For Sale: National .5 to 30kc. receiver $50. Collins 18J mobile xmtr $25. K7AGZ. 1133 "H" St., Sparks, Nev.

FOR SALE: V-37 all band antenna Collins 32V3 transmitter. Write for details. W7LOC. P.O. Box 8292 Greenway Station, Tucson, Arizona.

FOR SALE: Shure mike CB-12-D $8. Thordarson transformer (type T 19 P54 1120 vct) $6. Electricians fast calculator $4. Weston tube checker (model 685-2) $20. Miller radio interference filter (No. 7820) $15. Ohmite SRC-100 $5. Electronic photosound course (code volume II) $8. Protelgram model 170B (miniaturized high voltage supply unit, N. Amer. Phillips Co.) $25. San Gabriel AT 7-7510.

I have an SX-100 Mark 3, bought Oct. '57. This receiver is in top shape. I am willing to swap for no other than a Gonset Communicator 3, 12 volts on 6 meters in good shape. I shall expect the push to talk mike and cord. Please state if this is not available. Write Dick, W6TKG, P.O. Box 534, Brisbane, Calif.

TRADE: Hy-Gain 2 element Tri-Band beam and AR-22 rotator. Both new. Never used. Want power supply and final amplifier that will deliver over 200 watts to the antenna in AM linear operation Driven by Elmac AF67. Forrest. K6CTN, WIndsor 7-2820 or 38533 31st. St. East, Palmdale, Calif.

CLOSING FIXED STATION: Complete 500 watt cw xmitter using 4x250B and variable vac. capacitor in final 80-40-20 and 15 meter bands. VFO and final in 14x19x13" shield. With station control, coax relay and screen protective relay. Power supply includes 2000v at .250ma DC with percentage tap switch to allow reduction of power. Versatile, multi-voltage lab. type power supply for exciter, screen and bias supplies. Screen supply regulated and variable from 150-400v at 200ma. Power supplies in 42" wooden rack cabinet on casters. H.V. power supply itself worth more than asking price $150. Other components, Moseley trap vertical with radial wires and 50' RG8/U $22.50. Simpson model 355 midgetester $17.50. Millen grid dipper $42. Pair B611 handy talkies with batteries, like new $100. 4-125A's at $8. ea. Brand new LM18 freq. meter with AC power supply $62.50 BC 454 converter but no power supply $6. FOB. K6EYB. Danville, Calif.

WANTED: Standard make triband beam 10-15-20. Also rotator for same. Give full details, price. William Fisher, Indio, Calif.

FOR SALE: Viking II and Viking VFO $200. BC221-AH freq. meter with original calibration chart $60. P.E. Risen. EMpire 9-4066. W6WUY.

FOR SALE: Brand new 50 ft. crank up tower. Never installed. Call CLeveland 5-4526.

FOR SALE: Hy-Gain 3 element Tri Bander, 40 foot steel tower, AR22 rotator, 50 feet RG8/U and 75 feet rotator cable. $125. Cash FOB my QTH. Used only 4 months. Don Miner, K6ZIR, 1142 East 75th St. Los Angles, LUdlow 8-5057.

MOVING, MUST SELL: 250 watt phone CW xmtr 18 watt semi port. xmtr. Many extras, xtals, holders, tubes, xtal mike. Accumulation years parts fine for club or beginner take all $35. Couldn't buy meters surplus for this price. Come and get it quickly. Von Bergmann, North Hollywood. PO 1-4625.

FOR SALE: 500W ant tuner, 40M folded dipole 1 KW, 66 ft ½ wave 66 ft. 600 ohm feeders ant, balun coil unit, speed graphic outfit. Write for detailed description. Consider swaps. Can use Johnson low pass filter, signal sentry, SWR bridge, 100 micr-amp meter, Conelrad unit-rec. W6QBO, 828 Nevada Ave. San Jose 25, Calif.

WANTED: 1 used 250 watt UTC modulation transformer, type S-22. H. Pedersen, 7422 Wintersburg Ave., Huntington Beach. Lex 6-2695.

RECEIVER: NC-2-40D in xlnt cond. with ARC-5 xmtr and unwired pwr supply. (Xlnt buy for novice) $105. Also: Zenith Royal 500 pocket portable orig. cost $85. with 2nd set of batteries. $50. Webcor changer used 20 hrs. $25. W6RKF, 4896 Sunset Dr. Fresno, Calif.

Attractive young movie actress with good equipment desires someone to teach code and theory. Requires three days per week, one hour per day. Salary 9,000 per year, board, room and expenses. Must be free to travel as social companion 300SL supplied. Applications must be accompanied by new or renewal subscription to Western Radio Amateur. Write Box 1, 10517 Haverly St. El Monte, Calif.

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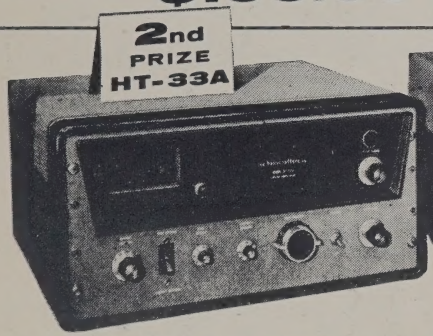
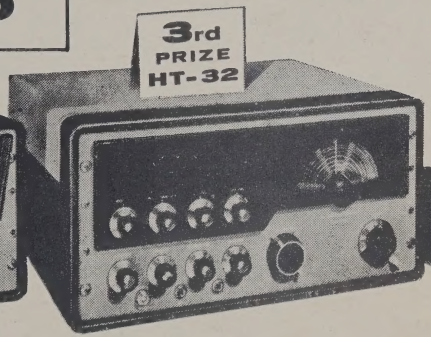




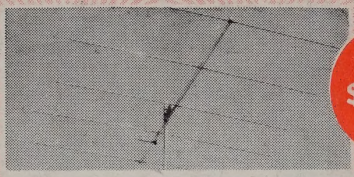
BILL THOMPSON RADIO SUPPLY

11159-61 Washington Blvd. Culver City, Calif.

VErmont 8-3352 TExas 0-1561

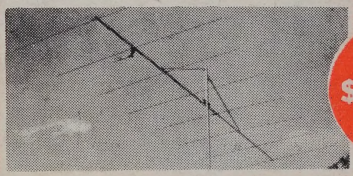
6 M for VHF

9 db
Forward Gain
Net wt. 9 lbs.
Boom length:
9 ft.



6M, 5E
$15.95

12 db
Forward Gain
Net wt. 18 lbs.
Boom length:
18 ft.



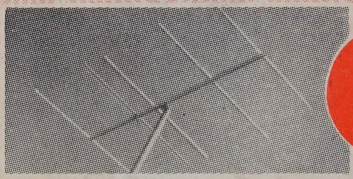
6M, 8E
$26.95

These Hy-Gain VHF Antennas are OPTIMUM SPACED for maximum forward gain. Parasitic elements are constructed from eighth inch 6061T6 alloy aluminum rod for high Q resulting in tremendous efficiency. The booms are ¾" heavy wall aluminum tubing. All hardware is hot dipped galvanized irridite treated for maximum weather ability. Extremely easy to put up and into operation these beams may be stacked for additional gain. Stacking harnesses for all VHF beams (specify model number) $4.95 additional.

New pre-calibrated (GAMMAXIAL) Gamma Match assembly with coaxially formed reactance cancelling capacitor built in, makes possible for the first time a perfect 1:1 SWR. Coax connector for 52 ohm feed included.

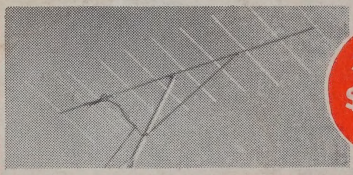
2 M for VHF

9 db
Forward Gain
Net wt. 1½ lbs.
Boom length:
6 ft.



2M, 5E
$6.95

13.4 db
Forward Gain
Net wt. 3¼ lbs.
Boom length:
12 ft.



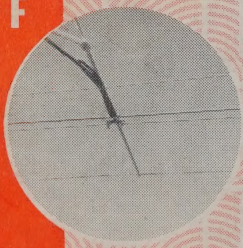
2M, 10E
$12.95

THE

hy-gain

VHF Antennas

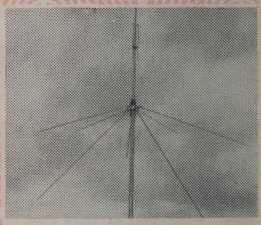
for
6, 2, 1¼ & ¾ Meters



All Hy-Gain ¾, 1¼ & 2M beams incorporate the exclusive adjustable folded ratio dipole for impedance matching. Perfect 208 ohm match for K 200 low loss parallel line or 52 ohm coax thru a half wave balun. Instructions included for matching 72 ohm coax, 300 ohm and 450 ohm balanced lines.

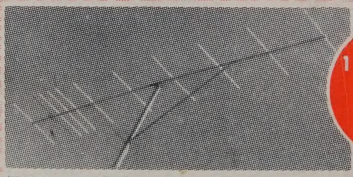
2 and 6 Meters

VHF Vertical



1¼ M

14.2 db
Forward Gain
Net wt. 3 lbs.
Boom length:
12 ft.



1¼M, 11E
$9.95

¾ M

16.1 db
Forward Gain
Net wt. 1¼ lbs.
Boom length:
8 ft.

¾M, 13E
$9.95

A new decoupling sleeve principal makes possible low SWR ¼ wave resonance maintaining efficient operation for the 2 and 6 meter bands. Overall height 5'. 52 ohm coax feed. Net weight: 24 oz. Complete with 2 band tubing ground plane and nylon base insulator assembly.

Model 26-AV $16.95

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